THE JOURNAL
OF THE
ROYAL UNITED SERVICE INSTITUTION.

VOL. XLI. AUGUST, 1897. No. 234.

[*Authors alone are responsible for the contents of their respective Papers.*]

COLONEL SIR AUGUSTUS S. FRAZER, K.C.B., F.R.S., ROYAL HORSE ARTILLERY.

AUGUSTUS SIMON FRAZER, one of the most distinguished officers whom the Royal Horse Artillery has produced, was the son of Lieut.-Colonel Andrew Frazer, Royal Engineers, and of Charlotte, daughter of Stillingfleet Durnford, Esq., of the Ordnance Office. He was born on the 5th September, 1776, at Dunkirk, where his father was employed at the time on the demolition of the works of that fortress. He received his early education at the High School of Edinburgh, where he was the contemporary of, amongst others, Lord Brougham. He is described as a lively boy, fond of boyish sports, clever, and, for his years, a good scholar. On 16th August, 1790, at the age of thirteen, he entered the Royal Military Academy, Woolwich, as a gentleman cadet.

On 18th September, 1793, he was gazetted a second lieutenant in the Royal Artillery, and three months later joined the Army in Flanders commanded by H.R.H. the Duke of York. In January, 1794, he was promoted to First Lieutenant, and was attached with two field-guns[1] to the 3rd Foot Guards, with which he served until the return of the Army to England in May, 1795. During that period he was present at the affair of Mouveaux, the battle of Cateau-Cambrésis, the affairs of the 10th, 17th, 18th, and 22nd May near Tournay, the affair of Boxtel, and the recapture of Fort St. André.

In May, 1795, Lieutenant Frazer was appointed to the Royal Horse Artillery, and on 16th July, 1799, received the rank of Captain-Lieutenant. In August he embarked with a troop of Horse Artillery for North Holland, to take part in the expedition under the Duke of York. He was present in several engagements, including the battles of Bergen, Egmont, and Alkmaar. He appears to have been for a time again

[1] The battalion-gun system, universally condemned by officers of the Royal Artillery, was extensively practised during the campaign. Occasionally the guns were brigaded, but, as a rule, they were attached in pairs to the infantry battalions, and placed in charge of an artillery officer. One waggon accompanied each pair of guns, and the detachment consisted of 1 subaltern, 2 N.C. officers, 8 gunners, 3 drivers, and 9 horses.—R. H.

employed with the battalion-guns, for on one occasion they are spoken of as being brigaded into a battery under his command.[1]

On 12th September, 1803, Frazer received the rank of Captain, and was appointed to the command of G Troop, Royal Horse Artillery, with which, in March, 1807, he embarked for South America, to take part in General Whitelocke's disastrous expedition to Buenos Ayres. He arrived at Monte Video on the 2nd June, and assumed the command of the artillery, which he retained until the active operations were over. Whatever may be said of General Whitelocke's conduct of the operations, Captain Frazer was distinguished—as afterwards in more glorious scenes—for his professional knowledge, his personal activity, his consideration for those under his command, and for the zeal and gallantry with which he played his part in the campaign. The artillery was very little engaged, but his arrangements for its transport and service were admirable and exhaustive.[2] He was most minute in his arrangements. He wrote the orders with his own hand, and, knowing the nature of the country which the men would have to traverse after embarkation, he issued the most detailed instructions, before leaving Monte Video, as to dress, diet, horses, etc. In fact, everything which ingenuity could devise to lighten the difficulties of the operation was thought of by Captain Frazer. When the opportunity occurred, the artillery behaved with great gallantry and intelligence, exerting themselves to the admiration of the whole Army, and Frazer was very favourably mentioned in General Whitelocke's despatches[3]:—"I cannot sufficiently bring to notice the uncommon exertions of Captain Frazer, commanding the Royal Artillery, the fertility of whose mind, zeal, and animation in all cases left difficulties behind." His kindness of heart and consideration for those under his command are shown in his official letters of the period, in which he invariably mentions the services of deserving officers and non-commissioned officers. In his last letter he implored that he and his troop might be attached to any portion of the Army which might be on active service. He seemed eager to drown the recollection of failure in the excitement of successes under some able leader. As this memoir will show, he was not disappointed.

---

[1] Duncan's "History of the Royal Artillery," Vol. II., p. 99. It is difficult to understand why battalion-guns, which were medium field artillery requiring only to accommodate themselves to the movements of infantry, should have been 6-pounders, while the A or chesnut troop of Horse Artillery, the only one employed in the expedition, and which was supposed to be light artillery and intended for rapid movement, was armed with guns of twice the calibre.—R. H.

[2] The detail of the artillery which actually took part in the attack on Buenos Ayres on 5th July, 1807, included three brigades, consisting of three 12-pounders, eight 6-pounders, five 4-pounders, two 3-pounders, three 5½-inch howitzers, and 298 non-commissioned officers and men.—*MS. Return, R.A. Record Office.*

Captain Frazer had urged, but in vain, the desirability of heavy artillery accompanying the Army, with a view to the bombardment of the city prior to the assault.—Duncan's "History of the Royal Artillery," Vol. II., p. 177.

[3] *London Gazette*, 13th July, 1807.

It was not for some time, however, that he was afforded the opportunity of showing, under a worthy commander, those high qualities of soldiership which marked him as one of the most brilliant and accomplished officers of an age fruitful in soldierly character. On 4th June, 1811, he received the brevet rank of Major, and, in November, 1812, joined the Duke of Wellington's Army in the Peninsula, having made a temporary exchange of troops with Major R. Bull, who was under the necessity of returning to England from severe illness. He had not been many months with I Troop before he received a more important command, that of the Royal Horse Artillery in the Peninsular Army; and in this capacity he served on the staff for the remainder of the war. He was present in May and June, 1813, at the affair outside Salamanca, that of Osma, and the siege of Burgos. On 21st June he was at the battle of Vittoria. Sir Alexander Dickson, commanding the artillery, in a private letter to General Sir John Macleod, particularising some of the officers who had specially distinguished themselves in the battle, wrote:—"I cannot close this letter without mentioning the valuable assistance my friend Frazer afforded me during the whole business. I may truly say he flew from one troop to another, accompanying them into action and attending to their supply, or looking out for roads for them to move. You, who know Frazer so well, can easily anticipate what he would be on such an occasion." Frazer, who had his horse wounded in the battle, was rewarded with a brevet lieutenant-colonelcy.[1]

His next service was at the blockade of Pampeluna, after which he was engaged at the siege of San Sebastian, a graphic account of which appears in his correspondence.[2] During the first siege he was in charge of the two breaching batteries, and his services were particularly brought to the notice of Lord Wellington by Sir Thomas Graham. During the second siege he was in command of the right attack, the fire from the guns of which was very destructive. The English artillery played a very distinguished part in the siege and capture of San Sebastian. The fire was remarkable for its vigour and accuracy, and elicited the surprise and admiration of all who

[1] He had a narrow escape during the action. Observing some squadrons of cavalry near our guns, he rode forward to ascertain who they were, and was surprised to find himself alone among the enemy. Fortunately he was not noticed, and he at once rode back and brought up Gardiner's troop of Horse Artillery, which quickly caused the French to shift their quarters. As Major Frazer was bringing up this troop along a narrow road, with the guns almost at a gallop, he saw a wounded French officer lying in the centre of the road. Another minute, and the heavy weight of the guns would have crushed the sufferer into the earth as they passed over him; but Frazer threw himself from his horse, dragged the Frenchman to the bank which skirted the road, and, remounting with the same rapidity, had barely time to escape the death from which he had generously saved his enemy. Providing him with some brandy, and leaving him in charge of a bombardier, Frazer afterwards sent a surgeon to attend the wounded officer, who turned out to be General Sarrut, who had been dreadfully wounded with case-shot. He expressed his deep gratitude to Frazer, and died shortly afterwards.

[2] "Letters of Colonel Sir Augustus S. Frazer, K.C.B., R.H.A." Edited by Major-General Edward Sabine, R.A. Published 1859.

witnessed it. Sir Alexander Dickson says it was "kept up with a precision of practice beyond all example." Sir Thomas Graham, in his different reports, bears ample testimony to it. In his report of 27th July, 1813, after the unsuccessful attack, he says:—"The conduct throughout the whole of the operations of the siege hitherto of the officers and men of the Royal Artillery and Engineers never was exceeded in indefatigable zeal, activity, and gallantry. I beg to mention particularly to your Lordship, Lieut.-Colonels Dickson, Frazer, and May, and Major Webber-Smith."

Lord Wellington's forward movement into France on the 7th October, 1813, by crossing the river Bidassoa, is considered one of his ablest movements. Lieut.-Colonel Frazer was most energetic in his services on the occasion. On the 10th November was fought the battle of the Nivelle, which resulted in the enemy's extended position being carried at every point, from St. Jean de Luz to the front of the Puerto de Maia, and in the capture of 51 French pieces of ordnance, and 1,500 prisoners. Lieut.-Colonel Frazer was one of the field officers in charge of the artillery on the right in support of the attack on the redoubts, which did essential service, and was acknowledged to have been skilfully handled. The conduct of the artillery during the battle excited the favourable comment of all, including Lord Wellington. Sir Alex. Dickson, in a private letter, spoke highly of Lieut.-Colonel Frazer's services. He was again prominent in the battles fought with Soult on the river Nive from 9th to 13th December. He says, in his private letters, that he was fortunate in seeing much of the fighting on these occasions, and in receiving handsome acknowledgments of the services of his gunners and guns.

The movements in the spring of 1814 were important and on a considerable scale. In February, Lord Wellington's designs included the passage of the Adour near its mouth—a feat deemed impossible by Soult—which was effected on the 23rd February. Lieut.-Colonel Frazer was present in the operations, as also in the investment by Sir John Hope of the city of Bayonne. On the night of the 27th February, Hope attacked the village of St. Étienne, drove the French out of it, and captured some prisoners. There was very little call for the British artillery, the principal work being done by General Himiber and his German Brigade. He applied for some of the British Artillery to bring off a French field-piece which was standing behind a traverse in the road between the enemy and his own troops, but they could not be spared, and Colonel Frazer volunteered to lead a party of the Germans for that purpose. Frazer ran forward, turned the gun round, and the Germans brought it in. Several of them lost their lives, and Frazer received a musket ball in his shoulder.

On the 10th April, Wellington obtained a decisive victory over Soult near Toulouse, on which occasion Frazer's services were acknowledged by Sir Alexander Dickson. Hostilities then ceasing, Lieut.-Colonel Frazer returned to England, receiving for his services the Peninsular gold cross, with one clasp for Vittoria, San Sebastian, Nivelle, Nive, and Toulouse, and the distinction of a Knight Commander of the Bath. Soon after his

arrival in England he was appointed to command the Royal Artillery in the Eastern District; and on the 20th December, 1814, was appointed to a regimental lieutenant-colonelcy in the Royal Artillery.

On the outbreak of hostilities in 1815, Sir Augustus Frazer was re-appointed by the Duke of Wellington to the command of the British Horse Artillery, and to be attached to Head Quarters. He left England on the 16th April and joined the Allied Army a few days later. He was present at the battle of Quatre Bras on the 16th June, but the Horse Artillery did not come up until after the fight. In the retreat of the 17th, the troops of Horse Artillery accompanied their cavalry brigades. They frequently came into action, and did good service in checking the advance of the French cavalry. In the great victory of the 18th June the Horse Artillery performed distinguished service, and their coolness and quiet steadiness were proverbial. An instance occurred during the day, which showed the foresight for which Frazer was ever remarkable. When the French succeeded in forcing their way into the wood of Hougomont, and Wellington saw the necessity of immediately dislodging them, he spoke to Frazer on the subject, and was surprised that the latter had already seen the importance of the position and had ordered up Major Bull's howitzers. The troop came up handsomely; their very appearance encouraged the remainder of the division, then lying down to be sheltered from the fire. The Duke said:—"Colonel Frazer, you are about to do a deliberate thing; can you depend upon the force of your howitzers? Part of the wood is held by our troops, part by the enemy"; and His Grace calmly explained what Frazer already knew. Sir Augustus Frazer answered that he could perfectly depend upon the troop; and, after speaking to Major Bull and his officers, and seeing that they, too, perfectly understood their orders, the troop commenced its fire, and in ten minutes the enemy was driven from the wood. This service, which, considering the proximity of the allied troops in the wood, was of a very delicate nature, was executed with admirable skill, and attended with the desired effect.

Frazer had some narrow escapes. He was rolled over by a round of case shot which wounded his mare in several places, a ball grazed his right arm above the elbow, and his second charger was shot in the neck. A lively narrative of the events of the Waterloo campaign, together with the march to Paris, and the surrender and occupation of that capital, is to be found in the interesting letters addressed by him to his wife and others.[1]

To his firm self-reliance and decision was due the fortunate circumstance that the British Horse Artillery was not overpowered by weight of metal, as it was outnumbered, at Waterloo. He prevailed on the Duke of Wellington somewhat against His Grace's predilections (for he knew little of artillery details or tactics), to permit him, almost on the eve of

[1] "Letters of Colonel Sir Augustus S. Frazer, K.C.B., R.H.A." Edited by Major-General Edward Sabine, R.A. Published 1859.

battle, to substitute 9-pounders for 6-pounders with many of the troops,[1] and to arm one troop wholly with howitzers. To this exchange may justly be ascribed much of the success of that memorable day, in the far heavier loss which the case-shot of the 9-pounders, stationed in front of the British line, inflicted upon the enemy advancing to the attack, and in the consequent saving of life to the allied troops by whom the attack was repulsed. "Had the troops continued with light guns," Frazer writes, "I do not hesitate to say the day had been lost." Another instance of his firmness of character is exhibited in the speedy way in which he made the Prussians, two days after Waterloo, surrender all the French guns which had been captured by the British, but which they had annexed and "regularly parked with Prussian sentries." Sir Augustus Frazer was awarded the Waterloo medal, and his services were specially mentioned by Major-General Sir G. A. Wood, who commanded the artillery at Waterloo.

Whilst serving with the army of occupation, Frazer was selected by the Duke of Wellington for the delicate duty of arranging with the French commissioners; to examine and report "in the most exact and most expeditious manner the actual condition of the various fortresses of France, and to settle when they should be formally given over to the allies." On the return of the Army to England he was appointed to the command of the Horse Artillery at headquarters, Woolwich, which he retained until promoted to a regimental colonelcy on 29th July, 1825. On 30th May, 1828, he was appointed Director of the Royal Laboratory, Woolwich, and was holding that appointment when his death occurred there on 11th June, 1835, at the age of fifty-eight.

Sir Augustus Frazer is considered one of the most distinguished officers which the Royal Horse Artillery has produced, and he won for himself and his branch of the Service a high reputation. In personal appearance he was strikingly handsome, while his interesting letters, already alluded to, stamp him as a thorough soldier, a perfect gentleman, a delightful companion, and a modest and unassuming man. He was a staunch friend, possessing a kind heart, and one that could feel for others' woes.[2]

R. HOLDEN.

---

[1] Batteries of Horse Artillery were at that time known as "troops."

[2] He was a great friend and admirer of Norman Ramsay, and earnestly sympathised with him in the misfortune which befel him after Vittoria. When Ramsay fell at Waterloo, Frazer was very deeply affected. In a momentary lull of the fire he buried his friend, from whose body he took the portrait of his wife, which Ramsay always carried next his heart. He cut from Ramsay's head a lock of hair and then laid his yet warm body in the grave. He erected a tomb in the church at Waterloo to Norman Ramsay's memory, and was instrumental in recovering the body and bringing it home to Scotland as the only consolation to his half-demented father.

MILITARY ESSAY.

(Honourably Mentioned.)

Subject:

"THE RELATIVE ADVANTAGES AND DISADVANTAGES OF VOLUNTARY AND COMPULSORY SERVICE BOTH FROM A MILITARY AND A NATIONAL POINT OF VIEW."

By Major C. E. D. TELFER-SMOLLETT, 3rd Bn. The South Staffordshire Regiment (Major Retired Pay).

"Non Aliunde Pendere."

Introduction.

DEPRESSION of trade, frequent and prolonged strikes, and other causes too numerous to recapitulate, have combined, in recent years, to throw large numbers of the working classes in this country out of employment. The resulting glut in the labour market has been eagerly taken advantage of by the military authorities to raise an exceptionally large number of recruits; and the facility which has thus been experienced in filling the gaps in the land forces of the Crown has, in some measure, withdrawn public attention from the whole subject of recruiting.

Rising markets, or an improved state of feeling between employers and employed, might at any time check or reduce the flow of men willing to respond to the efforts of the recruiting officials: recurring war scares and an increasing estrangement between Great Britain and the Continental Powers, might render necessary, or at least desirable, a large increase in the number of our Army and Reserve forces, and would thus occasion greater calls to be made on the manhood of the British nation.

The best method, therefore, of obtaining recruits, whether by inducement or by compulsion, may at any moment force itself on public attention as a subject for anxious discussion.

Great Britain and the United States alone stand forth as the champions of freedom in relation to military service. On the other side are grouped practically the whole of the civilised nations of the world: Germany, France, Russia, Austria, Italy, Spain, Switzerland,

Denmark, etc., and the new States of Servia and Roumania, in each and all of which some kind of compulsory military service is rigorously enforced.

Nature of Advantages and Disadvantages of Compulsory and Voluntary Service.

Most writers and speakers are more or less in agreement as to the nature of the advantages and disadvantages which arise from voluntary as compared to compulsory laws of enlistment. It is when the discussion turns to the extent and importance of these advantages and disadvantages that a great divergence of opinion makes itself apparent.

On the one hand it is stated that compulsory service should be resorted to because :—

1. It is a certain method of obtaining men.
2. It is the duty of every citizen to fight for his country ; and if his services are to be of the slightest value in war he must be trained, whether he likes it or not, in time of peace.
3. Compulsory service is economical.
4. By compulsion alone can the enormous Armies of the present day be raised and maintained.
5. If all classes of the community are represented in the ranks of the national forces, not only is the position of the soldier raised, but also men can be allotted, without reference to their individual whims and fancies, to that arm of the Service to which they are best fitted by physical characteristics and previous training.
6. If every man either is or has been a soldier, military subjects will be better appreciated by all classes, and the public discussion of military matters will probably lead to more practical results than if the average citizen is entirely ignorant of all that pertains to war.

The above considerations, weighty as they undoubtedly appear to be, are, for the present at least, regarded as of less importance by the majority of Anglo-Saxons, than the following arguments which are advanced by the apostles of voluntarism in things military. The latter allege :—

1. That voluntary service leaves men free, but that the tendency of compulsory service is towards national slavery ; slavery self-imposed, no doubt, but slavery none the less, eventually leading to the evils attendant on slavery.
2. That voluntary service does not withdraw men from civil life without reference to their own convenience or the requirements of their trades or professions ; but that compulsory service is injurious to commercial and scientific interests, by dragging workers from their field of usefulness, and hence strikes at the very root of national prosperity.

3. That any form of compulsion is so opposed to the sentiments of free men, that when it is resorted to, it frequently happens that the manhood of the nation is sapped by the emigration of those who flee from their homes to avoid military service; whilst the men who remain are soured with discontent.

4. That the British Empire has, in bygone days, waged wars of the first magnitude with brilliant success, voluntary enlistment being only partially supplemented at times of great danger by a clumsy and imperfect system of ballot for the Militia; and that if such feats were accomplished in the past without conscription by means of the national wealth, there is no reason why they should not be similarly accomplished in the future.

It will be gathered that, whilst on the one hand the arguments advanced in favour of compulsory service are, with the exception of the third—a plea for economy—rather those which would occur to minds influenced by a desire to strengthen and improve the national powers of offence and defence, on the other hand the arguments for voluntary enlistment are largely based on questions of public expediency from a commercial point of view, strongly allied, however, with considerations of a sentimental character.

Arrangement of Subject adopted in this Essay. — The circumstance that two Powers alone are content to rely upon voluntary enlistment, whilst practically all other nations have resorted to some form of compulsory service, renders the task of enquiring into the merits of the latter a much easier matter than a similar research into the advantages and disadvantages of the former. Moreover, as will be seen later, the position of the United States is so peculiar that their military institutions can hardly serve to any great extent as a guide to what ought or ought not to prevail in other countries. Hence the comparison between the two methods of enlistment will, to a very large extent, resolve itself into a consideration, first, of the military systems of the Continental Powers as opposed to that of Great Britain; secondly, of the results produced on the Continent and in the United Kingdom respectively, by each system from a national point of view.

I purpose in the following pages to describe and compare the military organisations of several of the nations which I have mentioned above; and I have selected the systems of Germany, France, Italy, and Switzerland as being sufficiently varied and sufficiently characteristic to illustrate the fruits which spring from compulsory enlistment.

I shall briefly allude to the military establishments of the United States; and I shall endeavour to carefully analyse and consider the results of voluntary enlistment as demonstrated in the Army, Militia, Yeomanry, and Volunteers of the British Empire.

Some account of the effects of both compulsory and voluntary service from a national point of view, and with special reference to the prosperity

and happiness of the people, will then be given; and an attempt will thus be made to throw some light on the grounds for the arguments advanced by the advocates as well as by the opponents of both systems.

The influence of universal service is so far-reaching that any inquiry into its merits must necessarily be of the widest character. In conclusion, I shall endeavour, whilst keeping in view the tendencies of national idiosyncrasies and the immunity from molestation conferred by geographical conditions, to set forth, as far as possible, the lessons taught by actual facts.

The German Army.

I shall be compelled to dwell at some length on the history of the German Army, because the system which now prevails has been a plant of slow growth, and its merits cannot be fully appreciated without some insight into the circumstances in which it took root, and under which it has been developed. Moreover experience, often of a disastrous character, has forced the rest of the Continental Powers to more or less model their organisations on that of Germany. If the principles of the latter are, therefore, thoroughly mastered, it follows of necessity that considerable knowledge of the systems of other countries must also have been gained.[1]

Historical Retrospect.—The vast hordes which, in 1896, owe allegiance to the sway of the Emperor William II. appear to be lineally descended from a small Army of about 30,000 men, which was formed by voluntary enlistment by Frederick William, Elector of Brandenburg from 1640 to 1688.

The permanent character of this force was its special novelty; for, unlike the Armies which preceded it, it was not disbanded when war came to an end. The actual numbers might be reduced on the declaration of peace, but the cadres of each battalion or squadron were maintained together with a proportion of the soldiers.

In 1701 the Elector Frederick III. was crowned first King of Prussia; his advancement in dignity being mainly attributable, it is said, to the prestige conferred on him by the possession of a Standing Army.

By 1740 the Prussians could, in case of emergency, place upwards of 83,000 men in the field. Seven years previously each regiment had been assigned to a particular district from which it drew its recruits; and compulsory service had been introduced, the upper classes, however, being exempt.

Simultaneously with these reforms a certain number of Militia battalions—the ancestors of the Landwehr regiments of the present day—were formed.

Towards the end of the eighteenth century a further step in the direction of the present organisation was taken; the Prussian Army being divided into four army corps, with territorial designations.

[1] The descriptions which follow are compiled from "The Armed Strength" of each nation; from Colonel von Lobell's "Annual Reports"; Martel's "Military Italy," etc. The military expenditures are in most cases from the Almanach de Gotha, 1896.

A period of trial and stress, only falling short of actual annihilation, was now approaching the Prussian Army. In the disastrous year 1806 its total strength nominally amounted to about a quarter of a million of men. Many of these were, however, on furlough, and apparently no effective machinery existed for their rapid recall to the colours, or for the general mobilisation of the force. The system which had produced splendid results during the eighteenth century under the Great Frederick, had now become antiquated and ineffective; and its death-knell was sounded when it failed to mobilise more than half the total strength of Prussia, in sufficient time to oppose her invaders, at Jena and Auerstaedt. These early battles did not conclude the campaign of 1806, but they decided the result; and by them Prussia was laid in the dust.

Amongst the humiliations imposed by Napoleon on the Prussians, at the conclusion of the war, was a condition contained in the Paris Convention of 1808, under which they were forbidden for a period of ten years from increasing their Standing Army beyond a limit of 42,000 men. They were further prohibited, during the same time, from holding a levy of the Militia.

The ingenuity of the King of Prussia's advisers was now exercised to the utmost, with the object of practically evading the spirit of these conditions, whilst adhering to the letter.

The ingenious device adopted with this view was a system of short service, under which young soldiers, whilst remaining liable to recall at any time, were permitted to return to their homes, as soon as their military training was completed, thus giving place for fresh levies. This expedient enabled the Prussian Government, whilst strictly limiting the number of men serving with the colours, to practically increase the strength of their Army to almost an unlimited extent. Every year 20,000 trained soldiers were permitted to return to their homes, thus making way for a corresponding number of recruits, drawn by compulsion from all classes of the community, and every year the number of trained soldiers who could be relied upon to fight for their country in her hour of danger was increased by 20,000; whilst the actual numbers serving with the King's Army remained fixed at 42,000. This force was divided into six brigades called respectively the East and West Prussian, Pomeranian, Brandenburg, and Upper and Lower Silesian; and the regiments forming these brigades were allocated and recruited according to their territorial designations.

During the next few years the bonds imposed by Napoleon on Prussia were slightly relaxed owing to the reverses sustained by the French arms; and further indirect augmentations of her military strength became possible.

Thus in 1813 a revival of the Militia was successfully attempted, battalions of what is now called Landwehr being organised.

So effectually had the military advisers of the Prussian King defeated, by these expedients, the intentions of Napoleon, that although they had generally adhered to his conditions as to the maintenance of a Standing Army of only 42,000 men, yet in 1815 no less than 117,000 Prussian

soldiers took part in the Waterloo campaign, a further force of 50,000 being kept in reserve.

Prussia having obtained complete freedom by the downfall of Napoleon, her organisation was pushed rapidly forward. The system of short service in the Regular Army and large Reserves, which was forced on the nation as a temporary expedient in the hour of her dire necessity, was gradually developed into a permanent institution. Space will not permit me to dwell in detail on each step of the military advance of Prussia. The tendency of that advance was directed with a view to expanding, with, of course, many modifications, the great conception of 1808; an Army representative of every class and of every locality, and constituting in time of peace a veritable national School of War, in which peer and peasant alike must graduate!

As a result of fifty years of careful preparation, the war strength of the Regular Army and Landwehr reached a total of upwards of 600,000 men.

In the spring of 1866 the outbreak of hostilities with Austria afforded a test of the efficiency of the Prussian military system. Seven weeks of fighting, culminating in the crushing defeat of Sadowa, brought the Austrians to their knees; and the brilliant successes of this campaign were justly considered to crown the Prussian Army with the highest renown.

Although, however, the perfection of its organisation and system of recruitment no doubt materially contributed to this result, yet the successes gained were in part attributable to the superiority of the Prussian needle-guns over the muzzle-loaders of their opponents.

It remained, therefore, for the still more brilliant victories gained over the French in 1870 to demonstrate beyond dispute the overwhelming superiority conferred on the Prussian Army by its organisation and system of recruitment.

After the campaign of 1866 several of the smaller independent States were incorporated with Prussia under the title of the North German Confederation. The Armies of these smaller States were reorganised on Prussian lines; and, on the outbreak of war, the forces of the North German Confederation numbered nearly a million of men.

The adhesion of Bavaria, Wurtemberg, and Baden brought up the total numbers arrayed against France to not far short of 1,200,000. The events of 1870-1 are too well known to need recapitulation.

In the earlier battles of the war the Germans were almost invariably able to concentrate greatly superior numbers at decisive points; this numerical superiority being mainly attributable to the perfection of the German military system. The later events of the campaign are specially instructive.

The destruction of the Regular Army of France was followed by a remarkable outburst of martial sentiment throughout the land.

Enormous levies were hurriedly assembled and partially equipped, and were then hurled against the German invaders.

A further series of crushing disasters was the only result of these

gallant efforts, and the fact was demonstrated to the French nation that further resistance was hopeless.

Two great lessons stand forth from the history of this campaign. The first, that, given an equality of population, a nation which adopts a national system of recruitment based on the liability of every citizen to render personal military service, must necessarily in any contest possess an overwhelming superiority of numbers over an opponent whose fighting-power rests on a less solid basis. The second lesson taught by the operations of 1870-1 is that, once hostilities have begun, no outburst of frenzied zeal leading thousands of untrained citizens to flock to the ranks can make up for the lack of a regularly maintained and universal system of national training for war.

Compulsory service of a kind, it is true, existed in France previous to 1870; but as we shall see later on, the French Armies at the outbreak of hostilities were not national forces in the same sense that the German Armies were national forces.

Bavaria, Wurtemberg, and Baden having been incorporated in the German Empire in 1871, the Prussian conditions of service have gradually been imposed on their Armies. During the period of twenty-five years which has since elapsed, a steady increase in numbers has been maintained in the Army of united Germany.

Present Military Organisation of Germany.—The land forces of Germany now consist of three bodies, viz., the Regular Army with its Reserves, the Landwehr, and the Landsturm. The Army thus constituted is divided into 21½ army corps, each of which is, generally speaking, allocated to a particular district, from which it draws its recruits, and in which it would be mobilised on the outbreak of war.

The organisation is essentially territorial, except in the case of Alsace-Lorraine. For political reasons the recruits from this part of the country are divided throughout the units of the Army. The Prussian Guard Corps also is composed of picked men from the whole of Prussia and from Alsace-Lorraine. The peace establishment of the Regular Army does not exceed about 550,000 men; but so close are the bonds which connect it with the Reserves and with the Landwehr, and so easily and quickly can these auxiliary forces be combined in a homogeneous whole with the first line, that Germany is now capable of placing 1,500,000 men with about 3,300 guns, in the field within about a week of the outbreak of hostilities. This enormous array would by no means exhaust the military resources of the Empire; for there are also in round numbers above 1,000,000 of depôt and garrison troops, which could be mobilised in the space of about three weeks, after a declaration of war, thus bringing up the fighting strength of Germany to about 2,600,000 men.

In case of great emergency, the Landsturm or last Reserve, which consists of about 800,000 trained and 3,000,000 untrained men, could be called to arms.

The Emperor has, therefore, above 3,400,000 at his command at an annual cost of about £28,000,000. The inhabitants of his Empire

number, approximately, 50,000,000, and hence in the hour of need 6¾ per cent. of the entire population could take up arms for the defence of their Fatherland: not in the capacity of raw recruits, but in most cases as highly-trained soldiers, and in all with some military knowledge.

I may add that it is estimated that at the present rate of advance, about 4,500,000 of trained soldiers will be available by the year 1916.

These stupendous results are the product of laws, under which every German citizen, with the exception of members of reigning or former reigning houses, and of persons medically unfit, is liable to render military service without substitute from the end of the 17th to the end of his 45th year. It should be mentioned that in order to give young men full time to develop, they are not, in peace-time, called upon to serve until they arrive at twenty years of age.

In a few instances postponement of service is permitted, even with healthy young men who have arrived at twenty; as, for example, in the case of an only son who is the support of a destitute family, or in the case of young men engaged in studies of science or art, whose careers would suffer if such studies were interrupted; also with the only sons of farmers or factory proprietors, unable to superintend their own trade or business; and any such postponement may be followed by the practically complete exemption which is afforded by transfer to the Landsturm.

Few indeed, however, are those who altogether escape through the meshes of the military net. Lots are drawn by the young men forming the annual contingent, who have previously been subjected to a medical test, and those who draw the higher numbers, and thus escape service in the Regular Army, are usually passed, after a certain delay, into what is called the Ersatz Reserve, in which they receive a partial training.

Those drawn for active service with the Regular Army are liable to be detained for three years with the colours. The authorities, however, influenced by motives of economy and by the desire to pass as many men as possible through the ranks, usually permit young men to return to their homes after about two years of continuous service.

A certain number of what are termed one-year volunteers are allowed, *i.e.*, young men of education, possessing sufficient private means to pay the cost of their uniform, food, etc., and who, after working with their regiments for one year, are permitted to retire into the Reserve, provided that they can pass certain examinations in military subjects.

Troops are quartered in most University towns, so that students may undergo military training.

Service in the Regular Army is followed by four years with the Reserve, during which latter period each individual is required to undergo two trainings, each of eight weeks' duration.

From the Reserves men pass to the Landwehr. While serving with the latter organisation every man has to present himself for training on two separate occasions; the period of training being limited to fourteen days on each occasion; and it is only after a German citizen has completed eight years with the Landwehr and is transferred to the

Landsturm, that he can feel that, at last, he is free from the cares of military duty, except in case of a great national emergency.

The system of inspection and command is very perfect, as each army corps is divided into divisions, and each division is sub-divided into brigades, and all these units are commanded in peace by the generals who, as a rule, would lead them in war.

The French Army.

I will now briefly describe the military system of Germany's great rival.

Compulsory service before 1870 was, no doubt, a prominent feature in the military institutions of France; but the system had never been universally applied as in Germany, and during the reign of the Third Napoleon it degenerated into a conscription, weakened by an almost unlimited system of substitution, under which any young man who wished to escape serving in person could do so if he were willing to pay a substitute to take his place.

The Army thus became rather a body of mercenaries than a national institution; and, as its Reserves were rarely, if ever, recalled to the colours, they became worse than useless.

Gradually the whole organisation was undermined by these and by other abuses, and when the critical moment arrived in August, 1870, only some 220,000 Frenchmen barred the way to the advancing German hosts.

From the declaration of peace in 1871, to the present day, the whole efforts of the French Government and nation have been centred in regaining their old position, and rendering impossible a repetition of the humiliating and disastrous experience of 1870-1.

With this object in view, the French have, to a great extent, modelled their military system on that of their victorious opponents. The French recruiting laws are specially stringent, and even some of the avenues of escape from full military service, which are left open in Germany, are closed to the educated and wealthy in France. Thus since 1889, one-year volunteers have not been permitted; and every Frenchmen, irrespective of educational attainments or social position, is liable to render personal military service for 25 years of his life, beginning at 20 years of age. Physical incapacity or service in the Navy of the Republic alone exempts a French citizen from this obligation. Under certain circumstances, however, a soldier may be allowed, when he has completed one year's service with the colours, to return to his home to await the time when he shall be entitled to be transferred to the Reserve.

This privilege is granted to soldiers peculiarly situated; for example, to the eldest sons of widows.

The total period of 25 years of military service is divided between the Active Army and the Reserve of the Active Army; and the Territorial Army and the Reserve of the Territorial Army. After quitting the Active Army, men are recalled periodically for training, on the same principle as in Germany.

The following are the approximate results of a quarter of a century of prolonged fortitude and national self-sacrifice.

An Active Army of about	600,000
A Reserve of the Active Army of	1,000,000
A Territorial Army of	1,000,000
A Reserve of the Territorial Army of	1,200,000

Giving a total of about 3,800,000 of all ranks, with 3,000 guns.

"If to these numbers be added formations of the forest and customs, of the military railway service, the men of the military auxiliary service, and the marine troops, the grand total would be about 4,125,000."[1]

There are about 38,000,000 souls in France, owning allegiance to the Republic, and hence it would appear that upwards of ten per cent. of the entire population are trained to arms. The total cost of these mighty hosts is about £26,000,000 a year.

France is, for recruiting purposes, divided into *Régions*; and in each region is stationed an army corps. As in Germany, each army corps is sub-divided into divisions and brigades.

Apart from the direct influence of the Army, every effort is made to foster a military aptitude in the people. Thus:—"A great extension has been given to military exercises in schools, to which a high importance is attached, as calculated to give a martial bent to the youth of France. Battalions are regularly formed, the arms and equipment being provided by the State. As might be expected, Paris has taken the lead in these formations, mustering twenty-four battalions of four companies."[1]

To lighten the pressure of military service on national industry, the law provides that apprentices and others engaged in commercial pursuits can obtain postponement of military service for two years, if such postponement is essential. Also medical students, after a brief military training, may complete their service in the military hospitals.

I will now describe the arrangements which exist in France with a view to enabling the military authorities to quickly furnish the extra horses and mules which would be required for the sudden and complete mobilisation of the Army. The species of compulsion applied with this object is not, perhaps, directly within the scope of this paper. I think, however, that it is of indirect importance, from the light which it throws on the extreme methods which the Governments of Continental Powers appear to consider would be necessary at moments of national danger.

Laws for the supply of horses and mules for the Army in times of emergency are in force in Germany and in most of the other European countries. Owing, however, to the completeness of the French civil administration, the system for the horse conscription appears to be specially well organised, and worthy of attention.

The law directs that a census be taken by the mayor of each

[1] "Annual Reports upon the Changes and Progress in Military Matters," by Colonel von Lobell.

commune annually, in the month of January, of all horses of six years old and upwards, and of all mules of four years old and upwards. All animals on the census tables are classified once a year according to their stamp and value by a mixed committee appointed by the general commanding the army corps.

In very few cases can the owners of horses obtain exemption, the law being almost universally applied.

The mixed committee having placed the horses and mules respectively in different categories, forward the lists thus prepared to the recruiting office of the regional sub-division.

The number of animals to be furnished by each region, in case of mobilisation, is fixed by the Minister of War.

When mobilisation is ordered, the proprietors of the animals which are entered in the census are compelled to bring them, properly shod and with bridle, to the place appointed; lots to determine which animals are to be taken are drawn in the presence of the mayor.

The proprietors of the animals taken receive payment according to a fixed scale; but any person failing to comply with the provisions of the law is liable to forfeit half the value of any animal in his possession, and further lays himself open to a heavy fine.

The Army of Italy.

Interest centres on the military forces of Italy, not on account of their numbers, which are less than those of several other Powers, nor on account of their organisation, which is admittedly imperfect in some respects; but from the circumstance that the Italian Army, unlike the Armies which I have been describing, has sprung into prominence in a comparatively short space of time. The various States into which modern Italy was formerly divided no doubt maintained Armies; but these military forces were under independent commanders, had separate and distinct organisations, and owed no common allegiance; hence the comparatively powerful and important Army which exists in the Italy of to-day cannot be considered as being lineally descended from any of them; and is therefore a remarkable example of the rapid and potent results of compulsory enlistment.

Italy, like all her neighbours, trusts for the recruitment of her land forces to a system of compulsory service, under which every male, medically fit, is liable to be called upon to render military service from his twentieth until the conclusion of his forty-second year.

This total period of twenty-two years is divided between the Regular Army and its Reserves, and the Mobile and Territorial Militia. One-year volunteers, postponement of service, and exemptions are permitted on the same lines as in Germany. Men who escape active service are placed in what is termed the third category of recruits; and after a time pass untrained into the Territorial Militia.

Men drawn for the first and second categories belong, before passing to the Mobile Militia, to the Regular Army and its Reserve for ten years; but those of the second category are granted permanent furlough after a

few months' training with the colours. Men of the first category serve with the colours from two to three years. The fighting strength of the Italian Army is approximately as follows :—

Regular Army - - - - - -	230,000
Men on permanent furlough and constituting the Reserve - - - - -	600,000
Mobile Militia - - - - - -	526,000
Total - - - - - - -	1,356,000

with upwards of 1,200 guns.

In addition to the above, there are about 1,600,000 men registered as belonging to the Territorial Militia. Half of these latter are untrained, and consequently useless from a military point of view ; but allowing only for men who have received some training, Italy has a total military strength of 2,100,000 soldiers.

The population of Italy is 31,000,000 ; and the annual cost of her Army is about £9,040,000.[1] The inhabitants of the different States composing modern Italy differ widely from each other in many characteristics, and as it is desired to blend them into one homogeneous race, a territorial system of recruitment is impossible ; and the country is divided into five zones for recruiting purposes, and each tactical unit is composed of an equal number of men from each zone.

The Army of Switzerland.

Germany, France, and Italy are essentially military nations of the first class. Their Armies, like those of Russia and Austria, are the principal and indeed the only guarantee which exists for the safety of their territories.

In the case of each and all of these Powers the acquisition of the whole or of almost any portion of their provinces would be regarded by their respective neighbours as an object well worth fighting for, if the resistance likely to be encountered were not of the most formidable character.

It is difficult to believe that the inhabitants of Great Britain could ever be induced to bend their backs to the load of a universal conscription for the Regular Army, such as those which have been described, unless forced thereto by misfortunes of the most terrible description.

I will, therefore, now endeavour to sketch the military institutions of a comparatively insignificant and essentially non-aggressive Power, the motto of whose Army, like that of the British Volunteers, might well be contained in the words "Defence not Defiance."

The existence of the Swiss Republic as at present constituted dates from the Congress of Vienna, in 1815. The neutrality of her territory was not expressly guaranteed, but it was assumed that the extent of the territory assigned to her would render her, to some extent, capable of maintaining her independence.

[1] The Almanach de Gotha gives the ordinary expenditure for 1894 in lires as 223,434,843, and the extraordinary as 2,548,000.

It does not appear that any nation is believed by the Swiss Government to specially covet the towering mountains or smiling valleys of what is usually called the "play-ground of Europe"; and it seems probable that any one of the neighbours of Switzerland would be deterred from a direct attack by the certainty that any such action would bring it into collision with other Powers, whilst the profit which could be derived would necessarily be small.

The dangers to which the little Republic is liable, and against which her Army is intended as a protection, are of an indirect kind, and have thus been described by a writer on the subject:—

"The importance of Switzerland from a military point of view, and the *raison d'être* of its independence, spring from the very fact which seems most directly to threaten the latter, namely, that it is bounded towards the four cardinal points by Germany, Austria, Italy, and France, and offers by its position to whichever of these Powers may be sufficiently strong to secure it an excellent base for offensive military operations against the others. In the event of an alliance between two or more of these Powers, the possession of Switzerland would afford to such allies a subsidiary base and a second line of attack, or under other conditions a point of junction and a means of intercommunication."[1]

To guard her territories from the possible aggression thus suggested, the Swiss Republic requires each of her sons to render military service from the commencement of the year in which he attains twenty years of age, until the end of that in which he reaches forty-four years.

The Army of Switzerland is divided into three forces, called respectively the Élite (*Auszug*), the Landwehr, and the Landsturm, and the above period of twenty-four years of service is equally divided between the two former forces. I will describe the Landsturm later on.

In a very few instances, exemption is allowed, as, for example, in the case of ecclesiastics; the members of the Federal Council, etc. Even those thus personally exempt are compelled to pay a special annual tax in compensation to the State for the loss of their services. Recruits, before enrolment, are subjected to a severe medical test.

The young men of Switzerland are by no means ignorant of all drill and training even when first called upon to render military service at twenty years of age.

"The Cantons are required to see that all youths, from the age of ten up to the time when they quit the primary school, whether they have been in regular attendance or not, undergo courses of gymnastics, preparatory to military service; after they quit the preparatory school, until they reach the age of twenty, this course of gymnastics is continued; and during the last two years firing exercises may be added by the direction of the Federal authorities, who will give to the Cantons the necessary instructions for these being carried out."[2]

---

[1] "The Neutrality of Switzerland and Her Defences," by Captain N. L. Walford, R.A.

[2] "The Armed Strength of Switzerland."

In the first year of military service each recruit passes through a course of instruction at one of the Federal Military Schools. A cavalry recruit is trained for sixty days, one for the artillery for fifty-five days, and a young man destined for the infantry is only kept under instruction for forty-five days. Having undergone this recruits' course, the men of the infantry and artillery of the Élite are only called out for training every second year; the length of such training being sixteen days for the infantry and eighteen days for the artillery.

The soldiers of the cavalry of the Élite are required to undergo a ten days' course of instruction every year.

After transfer to the Landwehr the calls on the time of each man become very slight; and during the twelve years spent in the latter force only about thirty days of military service must be rendered in time of peace.

The volunteer rifle clubs which exist throughout Switzerland, and which are provided with ammunition by the Government, also render valuable assistance to the military authorities by improving the shooting of the Army. If the members of any club combine to carry out, under proper supervision, outpost duty, skirmishing, etc., pecuniary assistance is also granted by the authorities.

The Élite (*Auszug*) numbers about 137,000 men; and of this number it is estimated that about 100,000 could be mobilised in a week; in four army corps each of two divisions.

The Élite is sub-divided into eight divisions, each of which is complete in the three arms. There are three hundred field and mountain guns, attached to the Élite, with a sufficient number of artillerymen and with all equipment. The guns are not kept horsed in time of peace, and as a rule the teams would be requisitioned when the order for mobilisation was received.

For training the artillery in peace, horses are usually hired.

There are also eight battalions of train included in the Élite, complete as regards officers, non-commissioned officers, drivers and harness; but horses and wagons would be requisitioned to enable these to take the field.

In Switzerland, as in many other countries, not only does the State require every man to render personal military service, but also a register of all horses and mules, and of all carts and wagons, suitable for military purposes, is maintained. These vital adjuncts to an Army in the field would be immediately taken, by the military authorities, on any emergency arising.

I may add that there are twenty-four squadrons of dragoons, and twelve companies of guides; but each cavalry soldier, serving in these, maintains his own horse; the cost both of original purchase and subsequent maintenance being partly defrayed by the individual and partly by the Government. Each horse, when purchased, undergoes ninety days' preliminary training.

Switzerland is divided into eight military districts, to each of which

one division of the Élite is assigned for purposes of recruiting and mobilisation.

Each district is sub-divided into arrondissements, which supply recruits for battalions both of the Élite and of the Landwehr.

The Landwehr can muster about 81,000 men, formed into sixteen brigades of infantry, with a proportion of artillery.

The names of all males between the ages of 17 and 50, not belonging to either the Élite or the Landwehr, are registered; and can, by the law, be called out, to the number of about 275,000, to form a Landsturm; but of these only 84,000 are armed and organised.

The population of Switzerland is about three millions, the total revenue amounts to rather more than £3,000,000, and of this sum, only about £897,000 a year is spent on the Army. Yet Switzerland has a total armed strength of 300,000 men. A force organised as the Swiss Army is cannot be expected to compare in training and military aptitude with the Standing Armies of the Great Powers. At the same time, it must not be forgotten that although the total number of days actually passed under training is small, yet the instruction given is both systematic and severe; *eight* hours a day being laid down as the absolute minimum that is to be devoted to drill and other military work by each man undergoing instruction.

The Élite has been pronounced by experienced judges to be a defensive force of no mean value; and whilst fully equal to the British Volunteers in drill and manœuvring power, is believed to be superior to them in many respects; for example, in the possession of an organised system of supply and transport and of a full equipment of field artillery, in the facility with which it can be mobilised, and in the fact that the presence of almost its full numbers can be counted on in case of emergency.

A portion of the Swiss Army was concentrated on the frontier, on the outbreak of the Franco-German war, and was actively engaged in making prisoners of and disarming the flying hosts of General Bourbaki, which was thrown over the Swiss borders, after being defeated on the Lisaine. In the mobilisation of the Swiss troops thus employed, some difficulties were experienced, and by the light of the knowledge thus gained considerable reforms have since been introduced.

The purely defensive character of the whole organisation, which I have endeavoured to depict above, renders a comparison between it and the Volunteers and Yeomanry of Great Britain very valuable. The members of the latter forces cannot by law be required to serve out of their native land; the intention of its founders and the policy of the nation render it almost certain that the services of the Swiss Army will be similarly restricted.

The sole reason for the existence of each of these organisations is, therefore, identical, viz., that their native lands may be secure from invasion.

The only practical difference between the Army of Switzerland and the Volunteers and Yeomanry of Great Britain is, that the latter come

and go as they please; the men of the former are under compulsion. A careful examination of the figures quoted above and later on will prove that this difference has a material influence on both efficiency and, in a lesser degree, cost.

Reasons which have Induced Nations to Adopt Compulsory Service.

In the descriptions which I have given of the Armies of Germany, France, Italy, and Switzerland, I have tried as far as possible to avoid needless repetition.

It will have been gathered, however, that the mainsprings of the three first-named Armies are identical, points of difference being alone discernible in matters of detail; and it is in the military system of Switzerland alone that any fresh principle is to be noted.

A careful study of the military institutions of Germany, France, and Italy and, in a lesser degree, of those of the Swiss Republic, will convey some idea of the systematic effort and universal self-denial which are undergone by each and all of the nations of the Continent. Military burdens, such as those which have been described, have not been undertaken altogether with a light heart or for the sake of military glory, but have been forced on our neighbours by circumstances, and are supported by them partly because the conviction has been carried, by the logic of facts, to the mind of every man, and of every woman also, that, if they are to enjoy their worldly possessions in peace, their national armaments must be of such a character as to impress their neighbours with respect; and partly for political reasons to which I shall refer later.

A great English statesman has recently declared that Europe is in a condition of "monstrous and barbaric militarism."[1] As a matter of fact, the existing situation has to a great extent arisen because every inhabitant, whether of France or Italy, of Germany or Switzerland, either from personal knowledge or from family tradition, is painfully conscious of what a hostile occupation of his native land really means; and such is the influence of these family or personal reminiscences, that the citizens of either of these countries, in common with the inhabitants of most other countries in Europe, will contribute both in purse and person, if not cheerfully, at least with uncomplaining resignation, to the great object of rendering the chance of foreign intrusion as remote as possible.

The warlike institutions of the United States and of England exhibit, on the other hand, the indifference to military matters which is engendered by centuries of freedom from foreign interference.

The Americans, without doubt, had considerable practical experience of the horrors of war thirty years since. The contest which then raged, however, was of a civil and domestic character, and eventually led to increased unity and increased power, and in no way resembled in the after effects the trials which were undergone at the hands of alien enemies, by Germany, Italy, and Switzerland at the beginning of this century, and by France both in 1814 and in 1870.

[1] Letter of the Right Hon. W. E. Gladstone, March, 1896.

The inroad of the Highland Clans into England in 1745, and the invasion and practical reconquest of the Highlands in the following year, were also essentially domestic struggles, the precursors of increased national prosperity; and the recollection of the miseries which undoubtedly attended these two campaigns have faded away both in England and in Scotland under the influence of 150 years of absolute immunity from the sights of war.

The Army of the United States.

Some description is desirable of the military institutions of the only Power of the first class, except Great Britain, that relies for the recruitment of its land forces on a system of voluntary enlistment; although it is unlikely that much light will thereby be thrown on the problem under consideration.

The Constitution of the United States expressly provides that every citizen between the ages of seventeen and forty-five is liable to serve his country in the Militia, if necessary.

The entire population of the States is about 70,000,000, and it has been estimated that if the law were put in force, in this respect, a host of about 9,500,000 men would be called to arms. This provision of the Constitution is entirely a dead letter; for not only is the national Militia never assembled, but it will also be gathered from the following remarks of the Major-General Commanding the Army, that no arms or stores of any kind exist in the country for the equipment of the whole or of any considerable portion of the force, even if assembled.

"It is again respectfully suggested that a reserve supply of the most approved infantry rifles and of the standard breech-loading rifled guns be provided in amount sufficient, not only for the Regular troops and organised Militia, but for such volunteers as may be immediately called into service in the event of an outbreak of War."[1]

The military forces of the Republic are limited to the Standing Army and the organised Militia. The Standing Army has a nominal strength of 30,000 men; but its actual numbers do not in most years exceed a total of 28,000.

The United States Regular Army is usually considered to be in a highly efficient condition; but this comparatively trifling force, together with the organised Militia, is only maintained at an annual cost of £11,360,000.[2]

The organised Militia numbers about 115,600 men, and considerable doubt was thrown on the efficiency of this force by the American newspapers during the war-like discussion which was carried on in the United States at the end of 1895 and the beginning of 1896.

On the other hand, many writers have asserted that the organised Militia will bear comparison with the German Landwehr.

Whatever the merits or demerits of this Militia force may be, it is

[1] Report of the Major-General Commanding the Army to the Secretary of War, October, 1893.

[2] According to the Almanach de Gotha, the cost, in 1894, was $56,841,759.

certain that when combined with the Standing Army, it would only give to America a fighting strength of about 144,000 men. These numbers are doubtless sufficient to carry through any task likely to be entrusted to them. Their principal, and indeed only, duties are to keep the Indian tribes in check, to preserve order on the frontiers, and occasionally during labour disputes to overawe the turbulent spirits of the great cities.

From the Canadian frontier alone could invasion be attempted; and notwithstanding occasional outbursts of excitement, it is hardly likely that any appreciable number of American citizens seriously believe that, under any circumstances, Great Britain would attempt an unprovoked attack from that quarter.

A well-known writer on the subject has said that "The United States can afford to be unprepared, for the absence of causes of quarrel with great European Powers, and the vast extent of the country render any invasion improbable, and an attack by a moderate force absurd.

"Were it otherwise, we should have to recognise that the military organisation is totally insufficient for a first-class Power.

"The United States do not possess an India. Great Britain is in a very different case, and can by no effort of will throw off the responsibilities of her position.

"The United States have never tried their troops against any of the modern European organisations, nor are they likely so to do."[1]

It is hardly necessary to insist that the fact that the Americans do not resort to compulsory service really proves nothing as to the advantages or otherwise of that institution.

The British Army.

The principal obstacle which blocks the way when any attempt is made to draw a comparison between British and foreign institutions, is the habit which prevails in this country of decrying with easy indifference everything that is national in character.

This obstacle is specially apparent in the case of military matters. Owing to the freedom of the Press, defects in Army organisation, even of the most trivial character, are publicly discussed in the newspapers, and even reach the House of Commons, and hence become magnified out of all proportion to their importance. Similar defects if existing in any Continental Army would probably never be heard of.

That the military organisations of Germany and of most of the other Great Powers are not only more efficient, but are also far more economical than that of Great Britain, is a fact beyond dispute; but that greater defects lurk under the military systems of foreign nations than are apparent to observers on this side of the Channel, cannot be doubted.

A further difficulty arises in the case of the subject under discussion in this paper from the circumstance that although Lord Wolseley, Lord Roberts, and other authorities, have drawn attention to many radical defects in our military system, yet it is a matter of great nicety to

[1] "The British Army," by Sir Charles W. Dilke, Bart.

determine whether, in many cases, such defects are attributable to voluntary enlistment or whether they are the result of peculiarities of national temperament and of other causes altogether irrespective of the existing system of filling the ranks.

Organisation.—According to the latest returns,[1] the following represent the effective numbers at present serving in the United Kingdom :—

Regular Army - - - - - - -	108,000
Reserve of Regular Army - - - -	78,000
Militia (including Militia Reserve) - - -	108,000
Yeomanry - - - - - - - -	9,000
Volunteers - - - - - - - -	231,000
	534,000

In addition to these, there are 76,000 European soldiers in India and about 38,000 men quartered in the Colonies; but as the units stationed in India and the Colonies cannot be withdrawn, or if withdrawn would have to be replaced by other troops, it appears that England's actual military power is represented by the 534,000 as detailed above.

It has been announced in the House of Commons that on the order being given for mobilisation, three army corps and four cavalry brigades would be formed out of the Regular Army and its Reserves; thus constituting a field army of 112,000 men, with about 300 horse and field guns of the Royal Artillery.

For garrison and for the occupation of defensive positions, there would be about 333,000 men, with 98 batteries manned by Volunteer Artillery. The armament of these batteries would as a rule consist of heavy guns of position, rather imperfectly horsed with hired teams; and hence they would possess little mobility and no manœuvring power. Lastly, there would be in reserve about 90,000 men, consisting of the recruits at the depôts and unallotted troops.

The Regular Army has an establishment of about 14,000 horses, and there is a reserve of horses of about the same number. These latter are held at the disposal of the Government, in case of emergency, in return for an annual payment to their owners of ten shillings for each horse so registered. It is almost needless to remark that, under the law of England, as in the case of men, so in the case of horses, no compulsion is permitted.

I now come to the important question of command, inspection, and control.

The defects which are generally admitted to exist in this portion of our military system are no doubt largely attributable to the fact that not only must the British Army and its Reserves and Auxiliaries be in a condition to resist foreign enemies, but also they must be organised so as to feed and maintain, and, if necessary, reinforce the troops always quartered in India and in the Colonies. The burden thus placed on our Army unquestionably places it in a unique position of disadvantage, as compared with the Armies of the other civilised nations of the world.

[1] Appendix H. Report of the Inspector-General of Recruiting, 1895.

But whilst making every allowance for this disadvantage, it would certainly still appear that the existing defects are, in some measure, the product of the system of recruitment.

England, Ireland, Scotland and Wales are, speaking generally, divided into seventeen military districts. Each of these districts is, in time of peace, under the command of a general officer who, with the assistance of his staff, controls all the units of the Regular Army, Militia, Yeomanry, and Volunteers which may be quartered in the district.

The numbers of men of the Regular Army quartered in each district are in no two cases the same, neither are the several arms combined in their tactical proportions in their respective districts.

Thus it appears from the Army List for April, 1896, that there are quartered in the North-Eastern District 2 battalions of infantry, 5 field batteries, and 2 cavalry regiments; and in the Eastern District, 3 battalions of infantry, 6 field batteries, and 2 cavalry regiments; but in neither of these districts are there any batteries of Royal Horse Artillery. On the other hand, in the Southern District there are 5 battalions of infantry, 5 field batteries, 1 battery Royal Horse Artillery, but no cavalry; and in the Woolwich District with a single battalion of infantry and no cavalry, there are 9 field and 3 horse batteries. The numbers of Militia and Volunteers belonging to each district also vary very considerably.

Hence the peace organisation of the British Army is no way applicable to war; and on the outbreak of hostilities the district commands must be broken up, and the various units composing them must be hurriedly formed into brigades, divisions, and army corps, which would be placed under the command of generals, who would in most cases have no previous knowledge of the officers and men whom they would be required to lead on active service.

The disadvantages of such a state of affairs are sufficiently obvious. The chain of responsibility and control maintained alike in peace and in war, and extending from the commanding officers of regiments to the commanders of brigades, from the commanders of brigades to the commanders of divisions, and from the commanders of divisions through the commanders of army corps to the headquarter staff and the Emperor himself, which is one of the most admirable features of the German military organisation, and which it has been the aim of all other Continental Powers to adopt, is conspicuously and absolutely wanting in the United Kingdom.

Various influences are no doubt at work to prevent the adoption of a system of command in peace adaptable to the requirements of war; but there can be no doubt that the question of expense is a potent factor in the continuance of the present state of affairs.

If an Army is to exist at all, private soldiers must be obtained by some means or other; and, as under the voluntary system of this country, the military authorities must compete in the market against other employers of labour, it has come to pass that the cost of the inducements necessary to attract men to the ranks to a great extent exhausts the patience of the tax-payers; and hence that the funds for bringing the

system of command and control into line with modern requirements are wanting.

The Regular Army.—The system of recruitment is territorial, in the sense that the recruits enlisted at each depôt are as far as possible posted to the regiment connected by name with the particular locality.

Thus, for example, the recruits enlisted at Shrewsbury are generally posted to the Shropshire Light Infantry, and those enlisted at Chester to the Cheshire Regiment. Under a voluntary system of enlistment, however, the exact number of recruits required for the ranks of any particular regiment cannot be drawn with certainty from the district or county with which the regiment is connected by its territorial designation.

Thus, from the report of the Inspector-General of Recruiting for 1895, it appears that from some regimental districts nearly 250 recruits joined the territorial regiment, and about the same number were enlisted for other corps; so that in several instances upwards of 450 recruits were obtained during 1895 from a single regimental district.

On the other hand, in the case of several of these districts, less than 100 men in all were obtained by the agencies under control of the regimental district commanders within the same period.

If the number of men obtainable from each regimental district may vary from 100 to 450, it is obvious that large numbers of recruits must be transferred from regiments connected with their native counties to others identified with altogether different localities; and hence that the merits claimed for a territorial system by most critics must in the case of the British Army be largely discounted.

As already stated, it is not customary abroad to allow young men to join the ranks of the Army until they are twenty years of age; the opinion prevailing that the physical development of men under twenty is not sufficiently good to enable them to make efficient soldiers.

In the United Kingdom, however, in order to fill the ranks, under voluntary enlistment, recruits have hitherto been accepted at eighteen years of age. Moreover it is greatly to be feared that the ages given on enlistment are often higher than the actual ages of the would-be soldiers, and hence that many youths contrive to join the ranks before they attain eighteen years.

As a rule, recruits are enlisted for a total of twelve years' service in all; and in most cases this period is divided into seven years with the colours and five years with the Reserve.

With regard to the Reserve, it has been found that, if the men composing it were recalled to the colours at regular intervals, for periodical training, the employers of labour would not retain them in their service; and further that the hardships which would thus be imposed on men of the Reserve would deter recruits from joining the Army. No regular system of training our Reservists is therefore attempted.

Soldiers on quitting the colours quickly lose their military spirit and discipline, and therefore if the regiments composing an Army are

dependent on Reserves for the completion of their war establishments, it is very desirable that the Reserve men should be periodically embodied for training in time of peace.

The Reserves of the German Army had, previous to 1870, been subjected to trainings at regular intervals, and hence its discipline was unimpaired by the great augmentation which took place, on the declaration of war, by the recall of the recruits to the colours.

On the other hand, on the calling out of our own Reserves in 1878 and in 1882 most of the men had not performed any military duty since quitting their regiments, on the expiration of their service with the colours; and in many instances the Reservists appeared at first to have, to a great extent, lost their military instincts, and to have found some difficulty in settling down to the steady routine of military discipline.

The maxims now accepted not only by Germany but by almost every other Power, as to the periodical training of Reservists, must in Great Britain, as we have seen, be set aside in obedience to the necessities of voluntary enlistment.

Whilst making every allowance, however, for the numerous disadvantages of voluntary service, there is no doubt that the greatest difficulties present themselves in the path of anyone who may attempt to formulate a system of compulsory service at all applicable to the requirements of the Regular Army of England.

The conscripts of Germany and France are generally required to serve for home defence alone; and although it may reasonably be contended that it is the duty of every able-bodied man to defend his hearth and home, and further that it is but a just exercise of paternal authority for the State to compel him to qualify himself so to do, in time of peace, yet the most fervid military patriot would hardly suggest that any English citizen should be under compulsion to risk his life and health in punitive expeditions, through the deadly swamps of West Africa, across the burning sands of the Soudan, or over the snow-clad peaks of Chitral.

Moreover, the experience which has been gained by the Continental Powers which have attempted to employ troops raised by conscription, in colonial adventures, hardly justifies the belief that the efficiency of the British Army would be enhanced for this kind of work by the substitution of conscripts for voluntarily enlisted men.

The following remarks of the Inspector-General of Recruiting indicate that the present tendency is towards improvement both in the numbers and in the physical and moral qualifications of the men willing to join the Regular Army:—

"Recruiting for the Army during the past year cannot be considered as other than satisfactory. The number of recruits required was obtained, the establishment of the Army on the 1st January, 1896, was complete, and the ages of the men serving at home and abroad showed a marked improvement. . . . . The improvement in the class of recruits enlisted is seen in the decrease in the net loss from desertion." [1]

[1] Annual Report for 1895.

The Militia.—The training and system of instruction of the Militia are frequently objects of unfavourable criticism both from within and from without the force.

It does not appear certain, however, that the existing defects in the direction indicated are immediately attributable to the system of voluntary enlistment; nor is it clear that they would disappear if the Militia were recruited under compulsion, as an extension beyond the present limit of twenty-seven days' training annually is improbable under any circumstances.

The condition of the force as regards numbers, on the other hand, would appear to be rather unsatisfactory, and the information contained in the last report of the Inspector-General of Recruiting affords considerable scope for reflection as to the merits of the present method of filling the ranks.

On the 1st January, 1896, the total effective strength of the Militia was about 108,000, and as the establishment is about 126,000, it follows that, to raise the Militia to their proper strength, some 18,000 efficient Militiamen are now required. Included amongst those reckoned as effective Militiamen are about 30,000 individuals composing the Militia Reserve.

Men who enrol themselves in this category receive an extra annual bounty of £1, and are liable in case of emergency to be transferred to the Regular Army.

The men of the Militia Reserve are required to have served in the Militia for two trainings before enrolment, and they must have other special qualifications as to character, etc.

In the intention of General Peel, the founder of the Militia Reserve, all Militiamen included therein, were to be supernumeraries in their regiments. This intention has never been put into practice, probably owing to the difficulty experienced in filling the ranks.

Hence, if war broke out and the Militia were embodied, at the moment of embodiment each Militia battalion might, and probably would, be deprived of from one-fourth to one-third of its rank and file, who would, as members of the Militia Reserve, be hurried away to join Line battalions. Moreover, owing to the special qualifications of the Reservemen, they are said to constitute the backbone of the force.

In a discussion on this subject at the Royal United Service Institution some years ago, an experienced commanding officer of Militia stated, with the apparent approbation of numerous other officers who were present, that "if the Militia Reservemen were taken away from the Militia, the Militia would be perfectly useless."[1]

Another source of weakness in the Militia was incidentally alluded to on the same occasion.

I refer to the youth of the recruits, of whom it was stated without contradiction, that, "Eighteen is the age which they give on enlistment; but every recruiting officer knows very well that in nine cases out of ten

[1] JOURNAL R.U.S.I., Vol. XXXIV.

they are very much younger, and that sixteen would better represent the real age at which they enlist."[1]

Not only is the Militia 18,000 men below its proper establishment, but if we are to accept the views of the most experienced colonels, it would appear that the force can never be in a satisfactory condition unless the men of the Militia Reserve are made supernumeraries in their regiments.

To carry out this measure, and fill the existing vacancies, it is obvious that 48,000 men would be requisite.

The present system of recruitment, however, scarcely suffices to maintain the Militia, even at its existing strength, and this in face of the prevailing glut in the labour market, and of the fact that apparently boys of sixteen frequently contrive to enter the ranks.

All testimony, therefore, points to the conclusion that the existing means of filling the ranks of the Militia is absolutely inadequate.

It is frequently urged that the Ballot Act is only suspended, and not repealed; and that if its provisions were enforced—as they probably would be if serious danger threatened the nation—the ranks of the Militia would quickly be filled by compulsion. A bill re-affirming the law in this respect has been brought before Parliament during the present session.

As a matter of fact, however, the machinery for enforcing the Ballot has not been in motion for more than three-quarters of a century, and it is highly improbable that the lords-lieutenant of counties and the deputy-lieutenants, who are the officials charged with its administration, would be able, in all cases, to adapt themselves at a moment's notice to the rapid and efficient discharge of such novel duties.

Moreover, the number of exemptions under the Ballot Act are so numerous and so far-reaching that it has been remarked that it is difficult to believe but that all classes of Her Majesty's subjects could contrive to evade its provisions, with the exception of casual labourers and tramps.

The Yeomanry.—Unfortunately, the numbers of the Yeomanry have, during the past ten years, shown a slow but steady decline. Thus, on the 1st January, 1886, the effective strength was 10,640 non-commissioned officers and men; by 1891 the number had fallen to 9,752; and now, in 1896, the force has shrunk to 8,978, of whom 8,493 were present at the annual trainings in 1895. The establishment is 11,678, and hence not far short of 3,000 troopers are required to make up the Yeomanry to its proper strength.

In considering the probable effect of compulsory service on this portion of the Army, the peculiarities of its constitution should be taken into consideration.

The very limited amount of training undergone by each Yeoman and each horse composing the force renders it probable that the Yeomanry, although valuable for detached duties, might not be very effective if suddenly required to manœuvre in large bodies; the amount of instruction received being very slight, even in comparison with that of Swiss cavalry.

[1] JOURNAL R.U.S.I., Vol. XXXIV.

On the other hand, the officers are generally believed to know their work; many of the men ride well, and are well mounted, be it remembered, on horses which are provided at their own expense; and some hard work is got through during the brief annual training of eight days.

It is also extremely probable that the Reserve Cavalry of some foreign nations, if subjected to a searching inspection, might exhibit some of the weak points which, no doubt, exist in the British Yeomanry. Any form of compulsion which might be introduced, whilst filling the ranks of the Yeomanry, would almost necessarily be accompanied by some system of part payment by the Government for the horses of enrolled members, such as exists in Switzerland.

It would appear, therefore, that the Yeomanry differs from the other portions of the land forces, inasmuch as it is probable that the introduction of compulsory enrolment therein, although doubtless leading to increased efficiency, might not necessarily be accompanied by any great saving of public money.

In many quarters it is customary to cast doubts on the value of this body of cavalry; and the assertion has been made that such a force is as much out of date in a modern Army as would be the men-at-arms of the Middle Ages, if revived.

As a matter of fact, however, many experienced cavalry officers believe the Yeomanry to be of considerable value; and, as great pecuniary sacrifices are undergone both by officers and men, if the force as at present constituted falls to pieces it would be difficult to replace it at the present annual cost of £73,000, even with the aid of compulsory service.

The Volunteers.—In an easily conceivable crisis the Regular Army and Militia might be withdrawn from Great Britain: the former to proceed on active service, and the latter to garrison Malta, Gibraltar, Ireland, etc. Under such circumstances the task of defending England and Scotland from regular invasion or occasion raids would devolve on the Volunteers. A vital question for every Englishman is, Would the Volunteers, as at present recruited and constituted, be fully capable of performing this task; assuming, of course, that the emergency arose suddenly?

An endeavour will now be made to reply to this question.

The establishment, including the staff, is about 263,000; but, according to the latest returns, the number of men actually serving is only 231,000, so that there are at present vacancies for 32,000 men.

Of the 231,000 Volunteers borne on the rolls, 225,000 are efficient; the annual cost of the force is £824,000. It is probable that there is no branch of the public service which has been the object of so much contradictory criticism as the Volunteer Army of England and Scotland, and as the fact of its being efficient or otherwise would afford the most complete argument against or for the introduction of compulsory service into the United Kingdom, I shall be compelled to speak at some length on the subject. The Volunteers have not unfrequently been subjected to much

ill-natured or ignorant criticism; but, on the other hand, it is unfortunately the case that they are from time to time the object of a great deal of inflated commendation, highly calculated to bring the force into ill-deserved ridicule.

This fulsome adulation, however, cannot conceal the substantial advance which has been made.

Individual zeal and praiseworthy determination have greatly improved the technical knowledge and military training of the officers; and the higher tone and increased efficiency of the commissioned ranks have led to greater cohesion and better discipline amongst the men. The importance of the Volunteers and their value amongst the defensive forces of this country are, therefore, generally recognised in the present day both officially and privately. There is, however, a very weak point in the Volunteer Army, which is frequently discussed amongst those associated with the force, but which has never attracted public attention, and is rarely alluded to by writers on the subject.

I can best explain my meaning by a careful analysis of the rank and file of a certain corps with which for some years I was intimately associated.

I will merely premise my remarks by saying that the condition of affairs, which I purpose describing, is not one peculiar in any way to the corps to which I am about to refer; but is a species of weakness which is more or less common in the large majority of Volunteer regiments throughout the country.

The headquarters were located in a large provincial town, and the composition of the corps was identical with that of several other battalions belonging to the same city: the rank and file being usually artisans, dockyard workmen, railway porters, and casual labourers.

The total strength was about 600 all told. Speaking generally, these men grouped themselves more or less into three distinct types; the fringe of each group or type running, it is true, into the fringe of that next to it in military merit; but each of the three classes of Volunteers being none the less distinguishable from the other two classes. The first type of men to which I shall refer were what may fairly be termed enthusiasts. According to a regulation, which has been in force until the present year, each member of a Volunteer corps was required to attend annually nine drills of not less than one hour's duration, besides the inspection.

The enthusiasts far from restricting their attendance to the minimum number legally required, on the contrary, hardly ever missed a parade; with the result that they received military instruction on, perhaps, 90 or 100 days in each year.

Such men were always willing to sacrifice their holidays at Easter or Whitsuntide, in order to attend the annual camp, or to take part in a marching column. Soldiering was their one amusement, and to military work they devoted all the time not occupied by the trade or calling by which they earned a living.

They were splendid men; as a rule good shots and good marchers;

and with very little experience they would have been fully equal, if not superior, to the best Regular troops.

Unfortunately, their numbers were by no means in proportion to their merits; and only amounted to about 12 or 13 per cent. of the whole strength, giving a total in the regiment, to which I am referring, of, perhaps, seventy or eighty men out of 600.

Still these enthusiasts by no means exhausted the valuable material of the corps.

Following them in military merit, but at some distance, was a sufficiently useful class of men, numbering perhaps from two-fifths to one-half of the corps. These latter Volunteers habitually exceeded somewhat the minimum number of drills, were fairly zealous, and although not very enthusiastic on occasions when long marches were the order of the day, could generally be relied upon to take part in any military operations of a sufficiently exciting or at least interesting character.

They formed, in company with the group of enthusiasts, a decidedly well-ordered battalion, numbering on occasions of importance about one-half, more or less, of the full strength of the regiment.

I now pass to the final group in a descending classification.

These were a nondescript body, of whom it is no exaggeration to assert that they could neither march, nor shoot, nor even behave themselves in the ranks with reasonable propriety.

Their object in joining the Volunteers it was somewhat difficult to fathom. Probably the principal influence at work to induce them to enrol themselves was a desire to be present at the balls or other entertainments organised by the officers, during the non-drill season, for the amusement of the rank and file. No doubt, also, the idea of being provided, free, with a well-lighted and well-warmed resort, such as is usually to be found at the headquarters of a Volunteer corps, had its attractions.

However this may be, it is certain that once attested as Volunteers, the chief object of such men was apparently to do as little work as possible. With this object in view, they endeavoured to evade the spirit of the regulations, whilst adhering to the letter, by making the minimum number of compulsory attendances out of uniform, and on dark evenings late in the season, when the vigilance of the staff might be expected to have somewhat abated.

Force of circumstances, in the form of a somewhat stringent rule, compelled the attendance of the majority of these undesirable Volunteers at the annual inspection; with the result that the work on that day was generally less satisfactory than on any other occasion during the year. Their careless ignorance not only rendered these men useless themselves, but tended to demoralise and render unsteady the more zealous members of the corps; thus filling with despair the hearts of both officers and staff.

I shall, later on, have occasion to again allude to the disturbing

effect produced in the ranks of Volunteers by the influx of 30 or 40 per cent. of their number of untrained or unsteady men.

In the case of many of the men alluded to, their inefficiency may have been attributable to some physical weakness, which rendered them absolutely incapable of undergoing fatigue without discomfort. Such men are not fit to be soldiers, and, as a matter of fact, under a system of compulsory service as in France or Germany, weaklings of this class would not be allowed to find their way into the ranks at all. Others, on the other hand, were endowed with dispositions which could not be adapted to military necessities without a very much severer code of discipline than can be enforced with Volunteers under the existing laws.

Two questions will be asked with reference to the military hard bargains whom I have described. The first, Why cannot commanding officers get rid of such men? The second, How comes it that Volunteer battalions are to be seen marching through the streets of London, on their way to inspection, on almost every Saturday throughout the season, presenting a smart and satisfactory appearance and showing no symptoms of disorganisation?

I would venture to reply to these queries: first, that as long as a useless man contrives to make himself efficient, and so earns the capitation grant which is paid for each member who does so, it is hardly to be expected that any commanding officer will dispense with his services unless he sees his way to replacing him with a desirable recruit—in many cases a difficult matter.

Secondly, the well-organised regiments to be seen marching through London must not be accepted as fair samples of the Volunteer battalions throughout the country. It is not suggested that country Volunteers are not to be met with, fully equal to their London brethren; but speaking with some experience, I have no hesitation in asserting that in many corps, recruited in the large provincial towns, the quality of a great deal of the human material contained in the ranks leaves very much to be desired, and is distinctly inferior to that to be met with in most metropolitan corps.

I have frequently heard experienced Volunteer officers state that, under the present system of recruiting, the establishments of many Volunteer corps are fixed at far too high a total; and hence that in their natural desire to keep up the ranks to the full strength, commanding officers are led to enrol men who really ought not to be Volunteers.

The existence of this useless class of individual, in the ranks of the Volunteers, reduces the value of the force in two ways: first, because if any system of defence is based on the supposition that, say 230,000 are available, it is obvious that great confusion and inconvenience will be occasioned if 30 or 40 per cent. of this number are perfectly valueless as soldiers; and, secondly, because the existence of this discordant element would detract from the fighting value of the remainder, the sickly by spreading confusion on the line of march and filling the hospitals, and the lazy and insubordinate by sowing insubordination and straining the reins of discipline. It is, no doubt, the case that all schemes for the

mobilisation of the Volunteers are based on the assumption that it would not be possible to withdraw the whole of the men from civil life simultaneously; and hence, that a portion only of the force could be called out at the same time. This assumption, however, only takes into consideration such loss of numbers as might be expected to arise from exemptions granted for reasons of public expediency or for casual sickness; and not the wholesale drain which would be occasioned by chronic infirmity or lazy indifference.

Another influence tending to reduce the fighting strength of the Volunteer Army is the circumstance that many of the best men have occupations in civil life from which they could ill be spared in the public interests, on the outbreak of war: for example, the workmen both in the Royal and in private ship-building yards; artisans in the arsenal at Woolwich, and in many private small-arm or gun factories; railway officials and workmen, etc.

The third direction in which numerical weakness makes itself apparent is in the gaps which exist in the commissioned ranks.

The corps of officers is now more than 1,800 below its proper establishment; and so serious has the deficiency at last become, that a sum of £13,000 is set apart in this year's Estimates for the purpose of assisting recruit officers to purchase their outfits; and thus encouraging gentlemen to accept commissions.

The organisation of the Volunteers is by no means perfect in so far as relates to interior economy, the arrangements for transport and supply, etc.; but great as the deficiencies in this respect undoubtedly are, they are hardly more vital than a less prominent defect which runs throughout the whole of the force, viz., an element of the greatest uncertainty as to the absolute number of men whose services could be relied upon at a moment of national danger.

Writers on the subject, whose opinions are worthy of the greatest respect, have expressed the belief that the existing numerical strength of about 230,000 men would be sufficient for the defence of the realm, if the force were provided with transport and an efficient organisation to enable it to take the field within reasonable time. Most of these authorities, however, have not been in daily and intimate association with the members of any units of the force, exclusively recruited from the labouring class; and hence they have had no opportunity for seeing the inner workings of the machine, and are apt to overlook the two conditions of existence to which I have already referred, and which must reduce the fighting strength of the Volunteers to a point very much below the paper strength.

Until this year no medical examination has been required before a recruit could be enrolled in the Volunteers. Out of about 450,000 men who annually reach the age for military service in Germany, an average of about 100,000, or between one-fourth and one-fifth, are found to be physically unfit to be soldiers. Assuming that the constitution of the average Englishman is about the same as that of the average German, it follows that nearly one-fourth of the men who present themselves for enrolment as Volunteers are too delicate to be of any use as soldiers;

yet it is to be feared that hitherto many such men have been allowed to slip into the ranks, in default of a medical test.

A medical examination is about to be instituted, but the full effect of this cannot be felt for many years. It is also, perhaps, permissible to remark that, in the absence of any very stringent orders on the subject, the physical standard exacted will not be very severe in the case of corps in which a difficulty is habitually experienced in filling the ranks.

Another condition which tends to reduce the effective strength of the Volunteers is the circumstance that the whole system is eminently calculated to favour the aims of any lazy or ill-conditioned men, who may simply enrol themselves in the Volunteers with a view to gaining something thereby, and doing as little as possible in return.

The British Volunteer is allowed, in most cases, to present himself for drill, without previous notice, on almost any evening throughout the year, and, as we have seen, the scheming section of the force avail themselves of this arrangement to escape all parades at which hard and useful work is likely to be enforced. The recent increase in the annual number of drills required for efficiency from nine to twelve cannot greatly amend this state of things, unless it is also provided that attendance at particular parades—for example, at some of those at which long marches are to take place—can also be enforced.

It is frequently asserted that when an emergency arises hundreds and thousands of citizens would flock to the headquarters of each corps, and that a few weeks would suffice to double the existing numbers.

This would probably be the case, but it is very questionable how far such a sudden influx of recruits would increase the efficiency, as a fighting machine, of the Volunteer Army.

It is no disparagement to the force to say that, as a general rule, neither the officers nor non-commissioned officers have a sufficiently complete experience of military matters, or enough confidence in themselves, to enable them to assimilate and, if I may use the expression, to digest, a large influx to the ranks of untrained men, occurring, as it would do, at a time of the wildest national excitement, and under the most disturbing influences. As before mentioned, the comparatively small increase in numbers which is a usual feature at the annual inspection, and which is occasioned by the appearance on that day in the ranks of a limited number of lazy men, not usually to be seen there, is often attended by a remarkable lowering in the pitch of efficiency.

Great capital is sometimes made out of the fact that it is probable that large numbers of old Volunteers would be included amongst those who would join the ranks on a serious crisis arising; and it is assumed that the previous training undergone by these men would quickly enable them to take their place in the ranks as efficient soldiers.

Those who place confidence in the military knowledge of retired Volunteers base their arguments to a great extent on the fact that the system has worked admirably in the German and other Continental Armies, under which men who have served for a certain time with regiments of the Regular Army, and have retired into civil life, can be recalled

to the colours in case of need; and they appear to forget that an institution which may work well under certain conditions, may prove to be an utter failure under totally different circumstances.

Many German soldiers serve for over two years with the colours before being transferred to the Reserves, and all must serve for at least one year. During his period of service with the colours the German recruit is carefully and systematically instructed in his work by very experienced and highly-trained officers for some six or seven hours a day.

The British Volunteer usually signs an agreement to serve for three years. During the first and second years of his service he is obliged to attend altogether sixty drills, and during the third he has hitherto attended nine drills, but will in future attend twelve drills, making a total of sixty-nine drills in the past and seventy-two drills in the future, during this three years of service. Each drill must be of one hour's duration. His zeal will, in many cases, lead him to exceed this minimum, and he may be expected to have been under instruction at the utmost for perhaps ninety hours altogether by the expiration of his period of service.

If the hours occupied in class-firing be also taken into consideration, it may be estimated that during his first three years of service a fairly zealous Volunteer will usually have given as much time to gaining military knowledge as a German recruit is compelled to devote in one month to the same object. This comparison does not represent the exact state of affairs, however, inasmuch as each individual Volunteer may, to a very great extent, discharge the conditions of his military engagement how and when he likes, and hence the training and instruction which he receives cannot possibly be either systematic or careful; consequently, on his leaving the force, the little knowledge which he may possess very quickly disappears.

I may add that I have repeatedly seen this fact practically demonstrated in the case of men who, owing to illness or absence at sea have missed all drills for such short periods as fifteen or eighteen months.

There are a number of enthusiastic members of the force whose military knowledge is considerable. Such men, however, usually remain in the Volunteers for the best years of their lives, and after retirement would, in most cases, be too old to rejoin.

Lastly, it may be urged that the lessons taught by the later stages of the Franco-German campaign entirely refute the theory that increased fighting power would be conferred on the Volunteers by the large augmentation which would take place on a threat of invasion.

Twenty-five years ago a body of 120,000 Frenchmen, under General Bourbaki, were confronted on the Lisaine by a German Army of but 45,000 soldiers, commanded by General von Werder.

The French were brave and filled with enthusiasm, but their officers were wanting in experience, and the men had been hurriedly brought together, and imperfectly trained.

The German Army was well organised, and the men had, as a rule, been systematically prepared for war, not *after* hostilities had broken out, but during the preceding years of peace.

For three days the French struggled manfully; but their great numerical superiority failed to compensate for the lack of cohesion and discipline which quickly made itself apparent in their ranks; and after losing more than 8,000 men they were hurled back over the Swiss frontier.

This incident, one of many which might be quoted, leads to the conclusion that the number of effective Volunteers, adjudged by experts to be requisite for the protection of the Kingdom from invasion, should be maintained in time of peace.

If 230,000 trained men are sufficient for safety, then, notwithstanding the fact that the paper strength approximates to that number, many thousands of recruits are actually required to take the place of those now serving, who should be weeded out for moral or physical unfitness.

It has been said, and probably said with perfect truth, that but for the existence of the Volunteers, compulsory service for home defence would ere this have been established in these realms.

The zeal and self-denial of a proportion of the members of the force have excited respect and admiration throughout the world; but the fact that the Volunteers are 32,000 below their establishment, the paucity of officers, and above all the uncertain service rendered by many of the rank and file, all prove that the manly patriotism and military spirit of a limited proportion of the inhabitants of the country cannot compensate for the absence of the mighty and far-reaching influence of compulsory service.

Cost of the Land Forces of Great Britain.—The annual net cost of the British land forces, including the troops quartered in the Colonies, but not including those in India, is rather over £18,000,000.

It has recently been stated in Parliament that the 38,000 who garrison the Colonies cost about 3¼ million pounds a year; and hence the troops of all classes located in the United Kingdom, numbering about 530,000 men, with 700 horse, field, and position guns, require apparently about £15,000,000 for their annual maintenance. The population of these islands was, in 1891, 38,000,000; and of this number only a little more than 1¼ per cent. are enrolled for the defence of the country in the land forces of the Crown.

The precise space of time which would be requisite for the complete mobilisation of the three army corps, which would compose the field army, has not apparently been exactly laid down.

It is probable, however, that the period of six or seven days, which appears to be the limit allowed by Germany, France, and even Switzerland, for such operations, would be largely exceeded in the case of England.

Recapitulation of the Military Advantages and Disadvantages of Voluntary and Compulsory Service.

The foregoing sketches, brief and imperfect as they necessarily are, will have conveyed some idea of the results both of compulsory and of voluntary service from a military point of view.

The figures quoted are, in most cases, only approximately accurate,

as there are many discrepancies in the numbers given by different authorities.

No special stress has, as a rule, been laid on the question of relative expense, for it would seem that this branch of the subject would be best considered when dealing with the advantages and disadvantages of the two systems from a national point of view, and altogether apart from military necessities.

We have seen that the full and universal recognition of the natural law that every man should be so trained as to be able to fight for his country rendered it possible for Prussia, within ten years of the terrible misfortunes of 1806, to place a powerful and well-organised Army in the field to share in the glories of Waterloo; and that an undeviating adherence to the same path during the nineteenth century has enabled Prussia, after successfully crushing the Armies of Austria and France, and absorbing into her military system the resources of the lesser States of Germany, to firmly establish, as a permanent institution, a perfectly organised fighting machine of 3½ millions of men.

We have seen that the failure of the French Government, previous to 1870, to fully recognise the necessity for imparting military skill to every citizen led to the most terrible military disasters; that, in her anxiety to resume her place in the Council of Nations and regain her lost prestige, France has now to support the severest military burdens, as an atonement for previous neglect; and that, as a result of the tardy recognition of the importance of universal military training by all Frenchmen, there are at the present time about 4 millions of armed men, being one-tenth of the entire population, in readiness, if required, to take part in the defence of the Republic.

We have seen that the application of a universal military law throughout Italy, for but a quarter of a century, has enabled that Kingdom, previously insignificant from a military point of view, to take her place as a first-class Military Power with an armed force of 2 millions of men; and that compulsion enables the little Republic of Switzerland, with a population of but 3 million souls, to maintain a military establishment of more than 300,000 of, at least, partially-trained men, of whom 100,000 could be placed in the field within a week of a crisis arising.

We have seen that, although, owing to geographical and political considerations, compulsion is not resorted to in the United States, yet that the Constitution, in theory at least, fully recognises the liability of every able-bodied American to render military service, if necessary; and that in England alone, amongst the Great Powers, is this obligation entirely unrecognised.

We have seen that although the voluntarily enlisted men of the Regular Army of Great Britain are probably better fitted for colonial enterprise and for the exigencies of savage warfare than are the conscripts of the Continent, yet that the auxiliary forces of the Empire are generally deficient, both in numbers and in organisation.

Lastly, we have seen that Great Britain, with a population which probably now amounts to more than 40,000,000, has an organised

military home strength of only about 500,000 men, of whom a considerable percentage of those enrolled in the Volunteers might not be available at the moment of need; and that although the responsibilities of Great Britain are greater and more widespread than those of any other nation, yet that the field army immediately available is scarcely more numerous than that of Switzerland, and could not, in all probability, be relied upon to take the field as quickly.

Such are, briefly, the results of compulsory and of voluntary service from a military point of view. It will now be necessary to treat of the subject from the standpoint of national prosperity and national happiness, and without reference to questions of military expediency.

The Effects of Compulsory and Voluntary Service on National History.—Compulsory service, in some form or other, has existed in all ages and with all nations; but its development into a national institution applicable to all sorts and conditions of men is, comparatively speaking, so recent and so entirely a product of the nineteenth century, that most writers on the subject appear to experience considerable difficulty in tracing its results or foreseeing its probable influence on the lives of nations.

In a well-known work on trade and finance, expression was given to the following sentiments, which echo the prevailing opinion of Englishmen at the time that they were written:—

"Germany, from her newness and on account of the envy, hate, and jealousy that exist in various quarters against her, thinks it necessary to devote a great, if not a preponderating, portion of her national energies to the maintenance of a collosal military organisation, which must directly lessen her power to compete in the struggle for trade, with less hampered nations.

"She is an armed camp, the dread of Europe in some senses, and living to no small degree in dread of her neighbours. No one can tell through what bloody ways Germany may have to travel before her peoples can settle down peacefully to pursue those conquests which advance the material well-being of mankind.

"Nor is she free from domestic troubles—religious bitterness, and internal political confusion—all hurtful to material prosperity. In the glitter of military success these sources of division almost vanished out of sight; but the very peace which that success has temporarily secured, must lay the foundations of a struggle for freedom among the people who, if they are worthy to be free, will grow more and more restive under the severe discipline of a military *régime*. Peace will also afford sects the opportunity for marshalling their forces against each other, to the imminent danger of social harmony and German unity; and while Germany remains in this condition, we can hardly look to see her directly ousting us from our old trade position."[1]

Eighteen years have passed away since this was written, and during this period not a shot has been fired, not a drop of blood has been shed

[1] "The Resources of Modern Countries," by A. J. Wilson.

throughout Europe in any international quarrel in which any of the Powers of the first class have taken part.

The military system of Germany has been closely followed by all the principal nations of Europe, except England; but the armed millions which have been called into existence by the mighty agency of compulsion, far from being provocative of war, have afforded up to the present time a solid guarantee of peace; nor is this remarkable, if it be remembered that every potentate and every statesman is held back from precipitate action by the knowledge that in a campaign between the national Armies of the present day, disaster would mean to the defeated State not the mere overthrow or destruction of a comparatively small body of professional soldiers, but the annihilation of the manhood of the nation.

In the case of Germany, compulsory service lies at the root of the unity of the Empire.

It is beyond dispute that the completeness and brilliancy of Prussia's victories, both in 1866 and in 1870, which were directly attributable to her military system, alone rendered it possible for her rulers to constitute her as a rallying point around which the minor States of Germany might cluster to form the mighty Empire of to-day.

Moreover, the extension of universal service on Prussian lines to the contributory States of the German Empire has, admittedly, been the principal factor in holding together and consolidating what was at first believed by many persons in England to be a temporary and disjointed aggregation of States.

Far from the prediction, which I have quoted above, being realised that the German people would become more and more restive under the burden of military discipline, it would appear that, as years go by, the opposition to the imposition of compulsory service has diminished.

Turning to Italy, we find that it is often authoritatively stated that compulsory service is the keystone of national existence, and that the balance of opinion amongst Italians strongly inclines to support the following assertions:—

"After the cession of Venetia, and the events of 1866, the union of Italy was nothing less than a reality. If, however, the exterior of the edifice was completed, the interior showed defects by no means satisfactory. The fusion of seven small States into a single Kingdom could not be easily accomplished. . . . Compulsory military service could alone lead rapidly to the desired ends, bringing each day into immediate contact races absolutely unknown to each other, and inculcating the idea of a great national family stretching from north to south.

"It was felt that a severe discipline would create a sentiment of duty in general, and of duty towards King and country in particular, that the civilising regularity of military life would bring even the most uncultured recruit from the mountains of Calabria to comprehend the scope of the results obtained, and to imbue his compatriots with the ideas engrafted in himself. Thus, by many thousand voices, the idea of a great State, of which everyone formed a unit, permeated rapidly among

the lower social strata—the idea of a powerful community including every Italian—and by these means the action of the Government was singularly facilitated. The nation and the Army exercise on one another a reciprocal influence, the happy effects of which are everywhere felt, and to-day the Army has become the most popular institution of Italy—a matter apart from all the varying vicissitudes of party strife." [1]

In France there are no discordant States to be held together by the iron bonds of compulsory service; but, on the other hand, the previous non-existence of a fully-developed system of universal compulsion cost in 1871 two of her most valuable provinces, in addition to a pecuniary loss, which is said to have amounted in all to £350,000,000.

The outbreaks of revolutionary violence, which, it was foretold, would be the protest of oppressed peoples against the grinding burdens of compulsory service, have been conspicuously absent in recent years.

The unification of Italy was finally accomplished in 1870. The substitution of a Republic for the Empire in France—a revolution which was indirectly caused, *not* by universal compulsory service, but by its non-existence—was effected in the same year, and was followed early in 1871 by the consolidation of the German Empire and by the suppression of the Commune in Paris.

During the quarter of a century which has since elapsed not a single dynastic change of first importance has taken place, and, apart from the machinations of a handful of skulking wretches who preach the doctrine of dynamite, the surface of European politics has been, in so far as the domestic affairs of the Great Powers have been concerned, to a large extent unruffled.

It is doubtless the case that English political life has for many years been free from serious revolutionary upheaval, although the nation is unburdened by compulsory service; but it must be remembered that neither the English nor Scotch character is inclined to sudden or violent political change; and further, that it is at least open to question whether the imposition of universal compulsory service in Ireland might not have rendered the task of governing the sister island somewhat easier than it has been.

Moreover, to state the converse of the above, it seems almost certain that without the disciplinary influence of universal conscription the Governments of both Germany and Italy might, ere this, have been confronted by many "Irelands" from amongst the varying communities under their sway.

It is very difficult to draw any exact inference from events in the United States, but it is at least permissible to remark that, although the inhabitants of the great Republic are free from the irritating influence which is said to be one of the effects of compulsory service on the masses, yet that the domestic history of the Americans has been disfigured during the past twenty-five years by labour disputes, which have given rise to outbursts of anarchical violence far exceeding in the resulting loss of life

[1] "Italicae res," by Baron Haymerlé.

and property any demonstrations which have been excited in Europe by similar causes.

Further, if we turn again to Europe, it must not be forgotten that compulsory service alone enabled a comparatively weak community, like that of Switzerland, to concentrate a considerable force on the frontiers during the Franco-German war; that owing to the existence of this force the disarmament of the French troops under General Bourbaki who were pushed over the frontier was easily effected, and the violation of the territory of Switzerland by the pursuing Germans was prevented.

It is highly probable that even a temporary occupation of any portion of Swiss territory in 1871 might have led to complications extremely inimical to the future independence of Switzerland.

Before leaving the subject of the influence of compulsory and voluntary service, respectively, on national history, it will be desirable to briefly allude to the causes which have led to the present Empire of Great Britain.

When the sword was sheathed in 1815, no Power stood higher in the world, both from a military and a commercial point of view; and her splendid and commanding position was largely due to a series of brilliant military successes which, it must be admitted, had been achieved by forces raised by voluntary enlistment alone.

The military institutions of other European countries, however, have, as we have seen, undergone important and far-reaching modifications during the nineteenth century.

The Armies over which our voluntarily-raised troops triumphed under Wellington were formed by compulsory service, it is true, but the compulsory service of eighty years ago was less universal, and less far-reaching, than the compulsory service of to-day; and hence the forces of our opponents in the past were relatively less numerous than they probably will be in the future, even after every allowance has been made for increase of population.

In other words, whilst the machinery of compulsion has been so improved as to greatly increase its power, the machinery of voluntarism has remained to a great extent in its original condition.

The extension of universal military service throughout the Continent and the consequent prohibition of enlistment by the agents of any foreign Power, within the territory of each State, will render the wealth of Great Britain of less effect in the future wars than it was in those of the past, owing to the fact that she will be debarred from enlisting foreigners to fight under her banner.

It is customary to speak contemptuously of the Germans and other foreigners, who were in the habit of taking service under England, at the end of the last and the beginning of the present century.

As a fact, however, on certain occasions, these mercenaries rendered the most valuable service.

The Duke of Wellington's forces at Waterloo numbered more than 72,000 men; but of this number only 23,900, or less than one-third, were British; the remaining two-thirds being foreigners.

Many of these were, undoubtedly, perfectly useless owing to their cowardice; but it must be remembered that the men of the King's German Legion and the Hanoverians, both of which bodies were trained on the English system, fought splendidly; as was clearly evidenced by the fact that out of 9,000 soldiers of the Legion, nearly 1,400 were killed and wounded, and out of 12,000 Hanoverians about 1,800 fell.

These two bodies of German troops, numbering as they did about 21,000 in all, were almost numerically equal to the British troops on the field, and must have materially contributed to the successes of the day; for it is difficult to believe that without their aid 23,900 British, however brave, could have withstood for eight hours the desperate onslaught of the 75,000 veterans of Napoleon.

In the wars of the future, Great Britain will probably be compelled, to a great extent, to trust to her own sons to fight her battles.

The Effects of Compulsory and Voluntary Service on Prosperity, Trade, and Commerce.—I now approach a branch of the subject of this essay which is beset with difficulties, and in connection with which the figures and arguments advanced in different works are, in many cases, so distinctly contradictory, that it is almost impossible to arrive at any definite conclusion from their perusal.

The common-sense opinion, perhaps, of the probable results of compulsory service, if given without previously studying the subject, would be, that whatever the merits of such an institution from the point of view of a soldier or of a statesman, yet it must be unhesitatingly condemned by any individual who restricted his plane of observation solely to the world of commerce and the requirements of money-making.

Such an individual might be expected to fully endorse the following observations which were used, when speaking of the German Empire, by a writer on the subject of trade:—

"Besides the check to commercial prosperity caused by wars and rumours of wars throughout the world, nothing has contributed more to retard her progress than the ever-increasing exigencies of military service, the removal of tens of thousands of the class which a nation relies on to increase its wealth; and the subjection of young and able hands to the unproductive employment of a soldier's life; a life, it may be added, which does not consist in moving from one end of the world to the other, in seeing new countries, and in gathering new ideas, as is the case with the English soldier, who not unfrequently becomes a colonist on leaving the Army, but in Germany means idling away existence for two or three years in some second-rate German town, in the dull routine of a monotonous garrison life."[1]

On the other hand, the consensus of educated opinion will probably admit the accuracy of the remarks which appeared in the *Scotsman* on September 1st, 1891, as quoted in Williamson's "British Industries and Foreign Competition":—

"One of the facts that strike the observant Briton who spends a few weeks in the Fatherland is the enormous advance in industry and wealth

[1] "The Trade of the World," by R. G. Webster.

made by the Germans in recent years. We hear a great deal, on our side of the German Ocean, of the grinding taxation and financial strain brought about by the burden of military power which the Continental nations have chosen to inflict on themselves." After describing the vast improvement in Cologne since the war, it adds:—"The same traces of energy and prosperity, on an equally magnificent scale, are observable in many other towns, such as Frankfort, Aix-la-Chapelle, Dusseldorf, etc. Everywhere the creation of imposing buildings, railway stations, post offices, law courts, etc., as well as the reconstruction of the old cramped streets, and the addition of elegant suburban quarters, speak volumes for the material prosperity of the Fatherland. . . . . Commercial enterprise has made enormous strides since the establishment of the Empire."

This essay is not the place for, neither will its limits permit of, a dissertation on political economy; and I shall therefore confine myself to quoting a few statistics which are apparently beyond dispute, and to a brief comparison between the financial and commercial condition of the great nations which have adopted a system of universal compulsory service and that of Great Britain.

It must be admitted that in the pursuit of wealth and prosperity the United States, a land of freedom from military compulsion, pre-eminently stands first.

The territories of the great Republic, however, are equal in extent to those of the whole of the Powers of Europe together, and the inhabitants are more numerous than those of France and Italy combined, and are annually recruited by hundreds of thousands of emigrants from other countries; and, under such circumstances, any comparison between the wealth and products of the United States and those of any single European Power would naturally be in favour of the former, and hence no attempt has been made to make such a comparison.

I may remark that in the race for wealth the Americans appear to be outstripping the inhabitants of Great Britain quite as rapidly as they are those of the other European Powers, and hence that the financial superiority of America proves nothing as to the results of compulsory service.

The figures about to be quoted must be studied in the full light of the knowledge that until very recently both Germany and Italy have been, in comparison with England, excessively poor. Turning first to the degrees of extreme poverty existing amongst the respective populations, the following figures are instructive:—

	Paupers.	Per 100 Population.
England	810,000	2·8
Scotland	96,000	2·4
Ireland	109,000	2·3
France	290,000	0·8
Germany	320,000	0·7
Russia	350,000	0·4
Austria	290,000	0·7
Italy	270,000	0·9

From these figures, which are taken from Mulhall's "Dictionary of Statistics," and are for the year 1888, it will be gathered that in England, Ireland, and Scotland—the countries of voluntary service—the average percentage of paupers to the entire population is about 2·5.

In France, Germany, Russia, Austria, and Italy—the lands of a so-called oppressive military system—the average percentage of paupers is 0·7!

Many political economists are of opinion that the deposits in the savings banks are a sure indication of the degree of a nation's prosperity.

Here again I must resort to figures given in the "Dictionary of Statistics," showing the relative increase of such deposits:—

	Thousands omitted.		Increase per cent.
	1870.	*1889.*	since 1870.
United Kingdom -	53,100	107,200	102
France - -	27,400	111,800	308
Prussia - -	76,600	144,600	89
Russia - - -	2,400	7,200	200
Austria - -	40,300	122,600	204
Italy - - -	14,800	69,200	368

If the amount of savings banks deposits, therefore, is to be accepted as any criterion of national prosperity, it must be acknowledged that, with the single exception of Prussia, the nations which support compulsory military service are rapidly outstripping Great Britain. The following table, also adapted from Mr. Mulhall's works, indicates the total estimated wealth of nations, including the value of lands, cattle, houses, furniture, railways, ships, merchandise, bullion, and sundries:—

	Millions sterling.			Ratio per Inhabitant.		
	1870.	*1880.*	*1888.*	*1870.*	*1880.*	*1888.*
Great Britain	8,310	8,960	9,400	£264	£260	£247
France -	7,122	7,417	8,598	£187	£201	£224
Germany -	5,350	6,075	6,437	£141	£135	£140
Russia -	3,290	3,540	5,089	£44	£44	£55
Austria -	2,830	3,050	3,855	£79	£78	£99
Italy - -	1,750	1,860	2,963	£66	£65	£100

Regarded from this point of view, the Continental nations apparently hold their own with Great Britain in the advance along the path of financial progress.

Passing to the domain of commerce it will be found that remarkable and, in some cases, successful efforts are being made by the Continental merchants and manufacturers to wrest from Great Britain her trade supremacy; and further, that her most persistent and formidable competitor, from a commercial point of view, is Germany, the hot-bed and nursery of militarism. A striking example of the tendency on the part of foreign nations, but more especially of Germany, to surpass Great Britain on her own ground is afforded by the following figures, which are adapted from Williamson's "British Industries and Foreign Competition,"

Pig-iron Production of Leading Nations.

	Tons of 2,240 lbs.	Metric tons of 2,204 lbs.	
	Great Britain.	Germany.	France.
1880	7,749,233	2,729,038	1,725,293
1886	7,009,754	3,528,658	1,516,574
1892	6,616,890	4,793,003	2,022,989

It would also appear from the following figures, which are adapted from the latest edition of the "Statistical Abstract for the Principal and other Foreign Countries," a work prepared under the supervision of Sir Robert Giffen, Controller-General of the Board of Trade, that in coal production several of the Powers which support compulsory service are steadily gaining on Great Britain.

	Millions of tons.		Increase per cent. since 1880.
	1880.	*1894.*	
Germany	59	98	66
France	19	27	42
Austria	14	26	85
United Kingdom	146	188	28

On the other hand, figures can be quoted which would apparently prove that the supremacy of Great Britain is entirely unshaken. The fact, however, remains, that nations which should, in theory, be crushed by the burdens of compulsory service into the depths of barbarism, are able to compete on something like equal terms with a great commercial and manufacturing Power like England, in a few, at least, of the peaceful pursuits of life; and this in spite of the fact that until recently her trade supremacy was absolutely unchallenged.

Moreover, it is apparently beyond dispute, that the British markets are at the present time flooded with articles of every kind made on the Continent; and further, that year by year our exports—in other words, the extent to which foreign nations are dependent on us—tend to diminish; and year by year our imports—*i.e.*, the extent to which we are dependent on foreign nations—tend to increase: a state of affairs pronounced by many political economists to be the reverse of satisfactory.[1]

Every German is withdrawn from civil life for the year or more of his military service at the most impressionable age; but far from the commercial aptitude of German men of business being lessened by this interruption, it is generally admitted that they at all times display the greatest enterprise and ability.

The writer of a work from which I have already quoted, and whose prejudices are certainly not in favour of militarism, admits that "One fact, however, deserves notice: Germans are now pushing their way into the centres of English business in all parts of the world. German houses swarm in London, and in many ways they are vicariously, as it were, possessing themselves of the advantages previously monopolised by Englishmen. The principal colonial wool brokers here are now, if I

[1] The increase of exports shown in recent Board of Trade Returns is for 1895 only; and is too slight to upset an argument based on the diminutions shown in previous Returns.

mistake not, nearly all Germans, and there can be no doubt that as time goes on these will tend to draw the centre of business towards their own country more than is the case now. The settlement of hundreds of thousands of Germans in the various English Colonies must also have a tendency in the same direction." [1]

The conclusion that must be borne home by these facts to any unbiassed mind will be that the months or years spent under compulsion by every citizen of the Continental States, in military service, is not so completely time wasted as might at first sight be supposed; and that the loss of commercial or professional experience, which each individual suffers during his enforced withdrawal from civil life, is in some degree compensated for by the habits of order, punctuality, and obedience, which are inculcated during his military career.

Relative Cost of Compulsory and Voluntary Service.—The relative cost of voluntary and compulsory service, as exemplified by the annual Estimates of England and Germany respectively, was very fully and ably explained by the Parliamentary Under-Secretary of State for War in the House of Commons on 16th March last; and I may perhaps be pardoned for quoting at some length from his speech as reported in the *Times* for 17th March. The honourable gentleman remarked that:—

"It has been pointed out over and over again in this House that for 28 millions Germany maintains 21½ army corps and 8 cavalry divisions; for 26 millions France maintains 20 army corps and 7 cavalry divisions; for 31 millions Russia maintains 22 army corps and 22 cavalry divisions. Our position is wholly different, and our forces are organised for home and colonial defence on a different system. It is none the less a common statement by outsiders that enough money is voted, if only it were properly spent; that the introduction of a practical system would introduce enormous economies; and that, while we are spending 18 millions, we can barely put 2 army corps into the field. I wish, in introducing these Estimates, to bring out the facts to justify in some degree the totals, and thus, so far as the different circumstances admit, to supply material for a comparison with foreign Powers. I have had for this purpose the votes so redistributed as to show at a glance what the Army costs us as mobilised for war. . . . I trust that, wearisome though figures are, these may not be found uninteresting. From them you can see at a glance that at an annual cost of £6,620,000 during peace, we put into the field for home defence 3 complete army corps and 4 cavalry brigades, composed of 112,000 Regulars and Army Reservists. . . .

"Our garrisons in the fortresses abroad, the Colonies, and in Egypt, amounting to 38,400 men, cost us annually £3,254,000, or £84¾ per man for every expense, all being on the full-pay list.

"We shall have on mobilisation in defensive positions at home and in garrisons 333,000 men, costing £3,603,000, or on the average £11 per man for every expense. Behind these again we have 90,000 men, being the staff at the depôts, men of under one year's service, and

[1] "The Resources of Modern Countries," by A. J. Wilson.

unallotted troops, costing £3,214,000. Our expenditure in war-like stores of all descriptions is £1,420,000, which includes ammunition for and maintenance of big and small guns at home and all over the world.

"We spend £432,600 on fortifications, works, and buildings other than barracks. The War Office costs for military department £142,000, civilian department £123,000, non-effective £51,300; total, £316,300—an expense which, I am glad to say, is decreasing on the civil side by a reduction in the more expensive parts of the clerical establishment; and we thus reach our net total of £18,000,000. . . . Germany has probably the most economical Army in the world. Are we, in relation to Germany, extravagant on items which we can reduce? You cannot run a Voluntary Army on the same lines as a Conscript Army. . . . We pay our private soldier 1s. a day and £3 a year deferred pay, and every other rank in proportion. Germany pays 4½d. We give a ration costing 5d. Germany gives 3½d. We pay Army Reservists 6d. a day, or £720,000 a year. The German Army Reservist receives nothing. If paid 6d. a day the German Budget of £28,000,000 would be raised to £48,000,000. . . . The actual figures of comparison between the forces mobilised as army corps in Great Britain and Germany work out as follows:—Our three army corps and four cavalry brigades cost £6,620,000.

"The *personnel* of the 21½ German army corps and eight cavalry divisions cost, taking their Estimates on the same principles as ours, £26,056,000, or an average of £1,210,000 per army corps.

"We thus arrive, as a starting point of comparison, that the British army corps cost £2,200,000 apiece, as against £1,200,000 for the German army corps. But any analysis of the German Estimates, to bring out the actual cost of an army corps, is almost impossible, seeing that their paid staff includes the machinery for mobilising a much larger number of men than 21 army corps."

The unknown possibilities of expansion which are afforded by the German military system, and which are clearly hinted at in the concluding paragraph of the remarkable statement of facts above quoted, are worthy of attention.

It must be remembered that the field army which would be available for the defence of the Fatherland within a week of an outbreak of war, would consist of a million and a half of men; and if this monstrous force was divided into 21½ army corps, each corps would have an average of at least 65,000 men, even after full allowance had been made for the troopers and horse artillery absorbed by the eight cavalry divisions.

The British field army, which consists of three army corps and four cavalry brigades, numbers but 112,000 men; and hence each of these three army corps would consist of about 36,000 men.

To complete the comparison of the relative cost of compulsory and voluntary enlistment, it is therefore desirable to point out that whilst a German army corps of 65,000 men costs £1,200,000, an English army corps of 36,000 men costs £2,200,000.

The British military system is also in some slight degree dependent on subscriptions and payments derived from the commissioned ranks.

Thus the riding horses of the officers of both cavalry and infantry are, in the British Service, provided entirely at the private cost of the riders. The regimental bands are also, to a great extent, supported by the subscriptions of the officers.

In Continental Armies, on the contrary, the officers' chargers are provided and military bands are supported at the public cost. It is hardly necessary to point out that, if the latter system prevailed in this country, the cost of each British army corps would be decidedly larger than it now is.

There are, also, several other directions in which the comparison which has been instituted between the cost of British and German troops respectively does not hold good.

Thus the specified cost of a German army corps includes the permanent maintenance in time of peace of the generals and staff for the inspection and control, not only of each army corps, but also of the divisions and brigades into which it is sub-divided. In England, on the contrary, no organisation of this kind is attempted in time of peace.

Again, the German Estimates provide for the cost of the periodical training of both the officers and men of the Reserve; in Great Britain, on the contrary, the Reserves are never subjected to regular periodical training.

I venture to think that enough has been said to demonstrate that, whatever indirect burdens compulsory service may impose on the people, yet, whilst tending to efficiency, it also immeasurably reduces the cost of an Army; and hence places some limits on the direct burdens of taxation.

Influence of Compulsory and Voluntary Service respectively on the Happiness of the People.—I now arrive at the last, but by no means least, important consideration, with reference to compulsory and voluntary service, from a national point of view, viz., their respective influence on individual happiness and comfort.

No man, young or old, rich or poor, who is a member of a civilised community, is absolutely free to do as he likes.

In every State there are laws calculated to restrict individual freedom and independence; and if the existence of any restraint on personal liberty is to be accepted as a ground for unhappiness, then all civilised human beings must be unhappy. The respect for the liberty of the subject, which prevents compulsory service from being adopted, if pushed to its logical conclusion, would lead to the abolition of compulsory jury service and to the repeal of all statutes having for their object the regulation of the habits of individuals; as, for example, the licensing laws.

If it is opposed to the happiness of the people to compel individuals to join a military camp for three or four days at Easter or Whitsuntide, surely it is equally opposed to national happiness to compel men to neglect their trade or business for an indefinite time, in order that they may hang about the always uncomfortable and often insanitary purlieus of assize courts.

Again, if the obligation to devote an occasional evening to military training would be a degrading burden, surely it is equally degrading to forbid respectable citizens from spending their evenings after a certain hour, at the hotels or other public resorts of their choice.

It is extremely doubtful whether, as a matter of fact, the inhabitants of those countries in which compulsory service exists are more miserable than those of England, Ireland, and Scotland. The usual demeanour of the working classes in France would rather lead to a totally opposite conclusion.

One small community alone, out of the millions of inhabitants of the British Isles, subject themselves to compulsory military service. I refer to the industrious dwellers in the Channel Islands. During a somewhat lengthened stay in Jersey, the writer always observed that the general cheerfulness and vivacity of the people there were remarkable; and further, that no holidays were more looked forward to or enjoyed with greater zest than those on which some military display was to be afforded by the national Militia.

Again, it cannot seriously be alleged that in the study and practice of those sciences and arts which add to the sum of human happiness the inhabitants of France or Germany are more backward than those of Great Britain or of the United States; neither can it be maintained that the works of artists are less beautiful, nor, in view of many recent discoveries, the researches of *savants* less profound on the Continent than they are in the United Kingdom or in North America.

It has been suggested that the distaste for military service drives young men into emigration, and that the yearly exodus which takes place from the German Empire is attributable to the dislike felt by the working classes for their military burdens. Yet what are the absolute facts?

Writing in 1894, Mr. Williamson says, in "British Industries and Foreign Competition":—

"In no country in Europe is the rate of emigration to population so high as with us. Taking the average of the last five years for which we have returns, we find it to be, compared with the three chief countries of Europe, as follows:—

	Population.	No. of Emigrants.	Per 1,000 of Population.
Of French Nationality - - -	38,218,903	18,740	0·5
Of German Nationality - - -	49,428,470	104,400	2·6
Of Austro-Hungarian Nationality -	41,359,202	53,713	1·3
Of United Kingdom Nationality -	37,797,864	236,078	6·3"

It would therefore appear that in the United Kingdom, with absolute immunity from military compulsion, the emigration rate is higher than in any country in Europe; and that in France, where the burdens of the national Army press most severely, it is lower than in any other country; whilst the rate in Germany is one-third of that of England.

On the other hand, we seek in vain for those instincts of slavery in the domestic history of the Continental Powers which it was foretold by

many would be one of the fruits of military compulsion. As a fact, the utmost political independence is from time to time evinced on the Continent; and it is only a few months since a policy of colonial aggression which had been rendered distasteful by a military disaster, was unceremoniously reversed by the Italian populace, who absolutely refused to allow the national forces raised by conscription to be employed on any distant expedition, and promptly ejected from office the ministry responsible for the unpopular policy.

If we consider for a moment the happiness of the rank and file of an Army, it is hardly necessary to insist, in view of the frequent complaints which appear in English newspapers with reference to the exclusion of soldiers from places of entertainment, that the tendency of voluntary enlistment is to lower the position of private soldiers.

The conscripts of Continental Armies are to be seen in the best seats in theatres and concert-rooms, and their uniform is in no sense a degradation. The treatment to which British soldiers are exposed at places of public resort occasions unhappiness and humiliation both to the men and to their friends, and is disgraceful to the nation at large.

A moment's reflection will show that any system of filling the ranks of a profession stands self-condemned if its tendency is to degrade and debase the members of that profession.

Under a system of compulsory enlistment, men are appointed to that branch of the Service to which they are best fitted. Thus good riders find their way into the cavalry; chemists are posted to the sanitary corps; navvies are enrolled as sappers and miners, and so on; and the chances of a round man being placed in a square hole, with the resulting discomfort and discontent, is in some degree avoided.

Where universal service exists, some of the members of every family either are, or have been, soldiers; and hence every man is led to take a keen interest in the Army, a familiarity with the details of military organisation is widely spread, and thus the military requirements of the country are better appreciated, and are subject to more intelligent criticism than is the case where the voluntary system prevails.

So experienced a politician as Sir Charles Dilke has practically admitted that the control of the military forces of a State by elective assemblies is especially efficient in countries where compulsory service prevails, for he says:—

"We may take the case of France as an example of a not only republican, but thoroughly democratic nation. We see there admirable debates whenever any military measures are proposed, provided that they touch in any marked way the national character; and because France, like Germany, is always on the watch, and anxious lest war should break out, we find Parliament making extraordinarily little difficulty as to granting the supplies required. So, too, in constitutional Italy.

"It may be, and no doubt is, true, that on the whole the bulk of the French and of the Italian peoples desire peace; but I do not notice that cutting down the Estimates, and reducing the efficiency of the Army, are popular. . . . If money is badly spent, Continental nations know

whom to hold responsible; but they would consider it sheer madness to refuse to protect themselves by a thoroughly organised military force. It is well understood that everybody, from the highest to the lowest, is keenly desirous of both efficiency and economy."[1]

There is, of course, a reverse to the picture; for under compulsory service, without doubt, individual hardship frequently arises.

Thus a few years ago an article appeared in the *Temple Bar* magazine, which attracted some attention, as coming from the pen of one who had recently taken part, as a private, in the German manœuvres. The writer bitterly complained of the excessive and unnecessary privations to which he, in common with the rank and file generally, had been exposed. It is not to be expected that any universally-applied system can be administered without much individual suffering, and it is certain that the hardships of military service will always fall with special severity on men like the writer of the article referred to, who, although endowed with education and refinement, have not found their way into the commissioned ranks.

The effect of the compulsory withdrawal of breadwinners from civil life is a branch of the subject which falls within the sphere of national happiness, as well as within that of national prosperity; and may therefore be appropriately spoken of at this stage of the essay. In addition to the discomfort which may be inflicted on the families of the conscripts, it is of course easy to conceive that the industries in which they have been engaged may be seriously affected by the absence of the workers.

There are here several points which are worthy of attention.

As a rule, the men are enrolled at an age when they would not be likely to have wives or families dependent on them; and in the case of only sons, who through the death of a parent are the sole support of a mother or of sisters, exemption from military service is invariably accorded.

Moreover, the withdrawal of young men at twenty or twenty-one years of age from the labour market must tend to force up the wages of older workmen, who have, in the course of nature, incurred heavier liabilities than their juniors, and cannot therefore be an unmixed evil. Lastly, not a day passes without the bitter lament of the unemployed being heard, clearly showing that there is not sufficient work for all; and that some of the community, at all events, cannot engage in productive labour.

Is it not better in the interests both of the State and of the individual, that the number of idle hands should be reduced, by compelling a proportion of the male population to undergo a brief military training, thus teaching them habits of punctuality and discipline, whilst paying them a small wage, rather than that numbers of able-bodied men should at all times be wandering in poverty-stricken idleness about the streets?

Recapitulation of the Advantages and Disadvantages of Voluntary and Compulsory Service From a National Point of View.

An endeavour has been made in the foregoing pages to throw some light on the national aspects of military service.

[1] "The British Army."

It would appear that although the science of organising the manhood of a nation for war has made great strides during the latter half of the nineteenth century, yet that the gloomy forebodings which were indulged in when the military system of Germany was first adopted by other nations have not been realised; that the history of Europe during the past eighteen years has proved that an age of militarism may also be an age of peace; that the fabric of the German Empire took its rise in universal compulsory service, and is held together by the same mighty agency; that a like potent influence has been relied upon by the rulers of Italy, to weld into unity her varying nationalities; that, on the other hand, the neglect of France before 1870 to organise her forces on a national basis led to her downfall, and that as a consequence she has been compelled for twenty-five years to submit to the most severe burdens; that compulsory service alone enabled a small State like Switzerland to preserve the neutrality of her territories during the campaign of 1870-1; that the burdens of compulsory service have not, as was at one time foretold, driven nations into outbursts of revolutionary violence; that in the United States, where the people are free from compulsory service, civil outbreaks have, during the last twenty-five years, been witnessed, which have surpassed in anarchical fury anything of the kind which has taken place in Europe during the same period; that England's splendid position of 1815 was, no doubt, gained for her by troops raised by voluntary enlistment; but that the difference between the power of compulsory and of voluntary enlistment was less marked eighty years ago than it is now; and further, that in the future Great Britain will not be able, as in the past, to supplement her own soldiers by the German mercenaries who did such good service at Waterloo and elsewhere.

If we pass to the question of national prosperity and wealth, it would seem that since 1870 the nations of the Continent have compared favourably with the United Kingdom in the percentage of paupers to the whole population, in the deposits of the savings banks, and in the advance of national wealth, as evidenced by the average ratio per inhabitant; that during the same period, the nations of Europe, and more especially the Germans, who have supported universal military service for nearly 90 years, have shown a strong disposition to oust us from the trade supremacy which we have hitherto held.

It would further appear in so far as the direct cost of voluntary service as compared with compulsory is concerned, that a British army corps of 36,000 men costs £2,200,000 a year, whilst a German army corps of 65,000 men only costs £1,200,000 a year.

Lastly, with regard to the individual happiness and enjoyment of the people, it does not appear that the dwellers in countries where compulsory service is maintained are more miserable than those who live in lands which are free from such liability; nor that the progress of the sciences and arts which contribute to national happiness and comfort is materially hampered by military service.

It will have been gathered that although the rate of emigration from Germany is frequently indicated as a symptom of the discontent of the

people with their military burdens, yet the percentage of persons who emigrate from Germany is actually much smaller than the percentage of those who similarly quit the United Kingdom; and that although it has been thought that slavish instincts would be generated by compulsory service, yet considerable political freedom is frequently displayed by the inhabitants of Continental countries.

It has also been seen that the self-respect of the rank and file of an Army is much better maintained under a compulsory than under a voluntary system; and that the diffusion of military knowledge which takes place under compulsory service compels the military authorities to conduct the affairs of the Army with a greater regard for efficiency and economy than they would do if compulsory service were non-existent, and the acquaintance with military details less general. Finally, it would appear that individual cases of hardships unquestionably arise under compulsory service; but that by judicious exemptions these can be somewhat reduced, if not entirely remedied; that the compulsory withdrawal of workers from their employment might be expected to hamper the national industries; but that owing to the congested state of the labour market the strain is apparently not excessive; and that the tendency of compulsory service must be towards reducing the numbers of the unemployed; and must also, therefore, indirectly tend to the advantage and happiness both of individuals and of States.

Conclusion.

No person who has impartially approached the subject can doubt that the military advantages of compulsory over voluntary service are overwhelming.

The first gives numbers, efficiency, and, above all, the certainty that in the hour of need the strength of the Army of any State will be limited by its population alone.

The only argument which can be advanced in favour of voluntary service, from a military point of view, is the circumstance that the comparatively long-service soldiers of England and the United States perhaps show to greater advantage when employed in small bodies against barbarous enemies, than do the conscripts of the Continent. If we turn to the national aspects of the question, it would seem that even from this point of view the balance of advantage is by no means reversed.

That compulsory service is excessively economical is beyond dispute; that its existence in the United Kingdom would strengthen the hands of the Government in dealing with foreign affairs is probable; that it exercises such a crushing influence on the prosperity and happiness of nations, as is sometimes alleged, is very doubtful.

In the case of Great Britain, where there are four distinct military forces serving side by side under conditions so varied as those which prevail in the Regular Army, the Militia, the Yeomanry, and the Volunteers, respectively, the enactment of a law requiring every man not in the Navy or Naval Reserve to serve for a certain time in whichever one of these four land forces he preferred would not interfere in the slightest degree

with the civil pursuits of the people. A man can become a highly-efficient Volunteer without ever sleeping away from his native town for a single night, or neglecting his trade or calling for one hour.

The most plausible argument which can be advanced against the introduction of compulsory service in the United Kingdom is that the British Navy presents an impassable barrier to foreign aggression; and hence that a powerful home Army is unnecessary.

This argument cannot be better replied to than by quoting the following remarks of the present Commander-in-Chief; remarks, be it remembered, which practically focus the opinions of the Duke of Wellington and other illustrious generals.

Referring to the defeat of our fleet off Beachy Head by the French, in 1690, Lord Wolseley says, in his "Life of the Duke of Marlborough," "The story of these events deserves to be well considered, since it is a common article of belief, and one that is held by some able men, that England can have nothing to dread, so long as she has a strong fleet between her and France. Some even go so far as to denounce all expenditure upon a home Army as a wicked waste of public money. It is well to remind such, that sea, wind, and weather are uncertain elements, upon which wise men may well hesitate to base calculations involving the safety of an Empire. The accidents to which in the nature of things, a fleet must always be exposed, are so many and so appalling, and they are now greater than ever, that no master of the great theory of war . . . . would dream of committing the safety of a great European State solely to its Navy."

Great Britain's vast possessions excite the envy of foreigners, and her military unpreparedness tempts them to aggressive hostility, and thus is the cause of recurring complications and war panics.

The skill of her rulers and the self-restraint of her people recently averted a crisis in her foreign relations fraught with danger to her Empire.

It can hardly be doubted that the provocation which England received at the hands of two Powers, towards the close of 1895 and in the early days of 1896, would never have been offered to her if her naval supremacy had been supported by a military strength worthy of the greatness of her possessions and the magnificence of her traditions.

Interest and inclination alike dispose the inhabitants of Great Britain to peace; and if her influence were supreme, as it would be if she possessed a National Army, peace would be assured.

ARMY SIGNALLING AND ITS USE IN WAR.

By Lieut.-Colonel C. KENNEDY, p.s.c., Inspector of Army Signalling.

Friday, April 30th, 1897.

General the Right Hon. Sir REDVERS H. BULLER, V.C., G.C.B., K.C.M.G., Adjutant-General to the Forces, in the Chair.

ON my first receiving the complimentary invitation from the Council of this Institution to give a lecture on Army Signalling, I confess to having experienced extreme diffidence in attempting to give my views on the subject; for being aware of its practical nature, I was only too conscious of the fact that I had never seen it tested under service conditions in the field; and furthermore, the recent revised edition of the present "Signalling Instructions" fully embodied and almost exhausted all my ideas with reference to it. If, however, the few remarks I am about to offer for your consideration this afternoon succeed in provoking a profitable discussion—for it is a subject on which opinions differ freely—I shall have no cause for regret in undertaking my present task.

It has been said that army signalling has languished, chiefly owing to the limited powers of the apparatus employed; this is undoubtedly true, and I think that at times we have been somewhat too cautious in recognising, and applying to purposes of practical utility, the various improvements and suggestions for the development of this special work.

No doubt at the time the electric telegraph was first introduced into our Army, the future utility of signalling in its relation to military operations might have been seriously questioned, when compared to the more rapid and novel method; yet the fact still remained that, without some such system, communication with the Navy was impossible, for at that period the telegraph had conferred absolutely no benefit on the sister Service. The first time the telegraph was employed by us for military purposes was in the Crimea, and it is a curious coincidence that the same campaign witnessed also for the first time in European warfare "Sun-flashing," which was carried out by the Russians during the siege of Sebastopol; yet this latter method in some primitive form had been adopted by the North American Indians years previously, and according to many accounts was used by the ancients hundreds of years ago. No

attempt however appears to have been made to introduce "Sun-flashing" into our Army for twenty years afterwards, notwithstanding the report of the *Times* correspondent in the Crimea to the effect that the Russians were using a "mirror telegraph" worked by flashes. In 1875, the Indian Government sanctioned the adoption of the heliograph, and it made its first appearance in the field, during the Jowaki-Affridi expedition of 1877-78; and ever since then, its advantages being so manifest, it has been used with great success in nearly all our expeditions. In 1885 four heliographs were supplied to the various districts in the United Kingdom for experimental purposes, and in 1889 every regiment and battalion serving at Home and in the Colonies was equipped with two.

The adoption of the lime-light into the Service was likewise of long duration. So far back as 1826 Lieutenant Drummond applied this light during a trigonometrical survey he was carrying out, and by his experiments it was shown that the light was distinctly visible at a distance of sixty-four miles between Wales and Ireland, and again between Ben Lomond and Knock Large, a distance of ninety-five miles. In 1863 the late Sir Francis Bolton made use of its wonderful power by bringing out a portable lime-light signalling apparatus, the compressed gases oxygen and hydrogen being carried in a knapsack. This apparatus was tried across the Channel from Dover to Calais, and signals exchanged from the Crystal Palace to Aldershot, a distance of about thirty miles, with great success. A few years later he produced another form for signalling purposes, called the oxy-calcium light, by which the hydrogen was dispensed with, and a spirit lamp substituted, in combination with which a jet of oxygen was thrown on a pencil of quicklime; this modification of his former one is practically the same as that now in use, and which as recently as 1889 was issued to all regiments and battalions serving at Home and in the Colonies.

During the Abyssinian campaign of 1867-68 the telegraph and signalling worked hand-in-hand for the first time. The results appear to have been very satisfactory, for the report states that the signallers made themselves useful to the Army the whole way from Senafe to Magdala, more especially when crossing ravines; and in the actual advance on Magdala, in communicating with distant points relative to placing guns in position; yet the signalling equipment consisted only of flags, fog horns, hand lamps visible up to three-quarters of a mile, shutters, and cones for communicating with the ships at Annesley Bay.

I mention these facts as showing that in this country we are undoubtedly slow in adopting any new idea connected with the art of war, until its utility has been proved by continued experiments and a demand for its introduction has been widely experienced. England from atmospheric causes, on account of the enclosed nature of its country, its generally distributed network of roads and telegraphs, the restricted areas of its manœuvre fields, and the exercise of those motives of economy which are a drag on all inventions, has proved a bad nursery for the development of signalling.

Methods Employed for Conveying Intelligence and Orders in the Army.

The conditions of modern warfare demand more than ever early and reliable information regarding the strength, movements, positions, and possible intentions of your opponent. It remains for us to consider the various means adopted in our Service for conveying this information and orders in the field, they are:—

1. The electric telegraph.
2. Telephone.
3. Signalling.
4. Mounted orderlies.
5. Cyclists.
6. Balloons.

1. Following the order above enumerated, the electric telegraph does, and probably will, always play the most important *rôle*. It is the most rapid means of communication between fixed points, but time is required to establish or complete the circuit. In a hostile country it is vulnerable throughout its entire length, and the longer the line the more susceptible it becomes to interruption from accident, weather, or design. To guard it against such contingencies, patrol protection is absolutely indispensable, and the number of men for this special duty must be in proportion to the length of the line. Its tactical value in the field, like signalling, must largely depend on the commander and his staff remaining more or less at one place, and not constantly being on the move and at distances remote from the telegraph station. Our experience in savage warfare shows that the natives take a fiendish delight in cutting the wire; whether this is due from motives of curiosity, or a wish to become possessors of it, is immaterial, for the results are fatal in both cases. Along the Khyber line during the Afghan war of 1879-80, the line was cut ninety-eight times, and sixty miles of working wire carried away.

2. As a rival to the telegraph we have the telephone, but whether it will oust the former from its present position is a question for the future to decide; for it is not nearly so likely to give an infallible message, owing to the indistinctness of some voices when heard through it at a considerable distance; whereas the sounds emitted by the telegraph are virtually the same, no matter by whom it is operated.

3. As a valuable adjunct to and extension of our field telegraph system, signalling plays an important part in modern and savage warfare, and we are at once supplied with a powerful agency, by the proper and intelligent application of which we can produce results often unattainable by other means.

Its chief advantages are:—That within certain limits communication between selected points can be opened at once without any previously prepared connections; it possesses great mobility, and can be used where roads do not exist, and in countries inaccessible to draught or pack transport; it provides a means for carrying on communication over the enemy's head without his being able to prevent the operation; the cheap-

ness, portability, and simplicity of the apparatus are always a consideration to be borne in mind; and, finally, in combined naval and military operations, it supplies at once the connecting link by means of which the Services can maintain touch with one another.

On the other hand, the arguments advanced against its utility are:—

a. Its Success depends on the Weather and Climatic Influences.—I admit this argument is unanswerable, but it applies equally to balloons, and to a certain extent the telegraph lines, especially when the latter have been hastily constructed of indifferent or defective materials in exposed positions, or where the non-conducting nature of the soil makes it difficult to procure good "earths."

b. The Physical Features of the Ground.—This is to a certain extent true; but in many cases it is quite possible to overcome this difficulty and signal between two apparently invisible stations, by the erection of observatories, crow's nests, etc., as was done during the New Forest Manœuvres of 1895, when we were able by such means to negotiate some very difficult and enclosed country; and with regard to this point, the remark is borne out by Lieut.-Colonel A. Davidson, in his report on the signalling operations in the Bechuanaland Expedition of 1884-85, where he states:—"Nothing could be worse for signalling than the "ground between Maritsani and Mafeking, the range of vision being "limited to four or five miles in any direction, and no isolated hills being "visible. The grass was high and thick, and the ground covered with "clumps of thick, high bush veldt. Under these circumstances, it was "necessary to build mounds on which to place the heliographs to give "them elevation, and to cut lanes through the trees." This particular line was worked by the signallers from the 17th March, 1895, to 2nd April with the greatest success, the average daily number of messages being forty.

c. That its Action is Readily Detected by the Enemy.—Assuming it may not be possible to conceal the very act of signalling—which I do not, however, admit—it in no way implies that its meaning is understood by the enemy. In European warfare the transmission of a message in cipher is sufficient to dispel any fear that its purport will be of any use except to those in possession of the key-word. Flag signalling is the most exposed method, but even here we have a remedy, by either screening the signal party, or by making the sender, if necessary, lie down on his back; and as a rule, cover can be obtained naturally or artificially. Again, the lateral range of light of the heliograph visible at the observer's station, at a distance of 1 mile from the instrument itself, is about 8 to 9 yards on either side of the station; at 10 miles, from 160 to 180 yards; so unless you can place yourself almost in the direct line of sight, I fear you will be unaware that signals are being exchanged.

d. That the Presence of Troops may be Disclosed by its Action.—This argument hardly requires serious refutation, as it is entirely opposed to all the official accounts of signalling operations for the last twenty years, which invariably draw special attention to the isolated positions of

signal parties. However, I would reply that even when signallers are working with troops, they alone do not indicate the presence of the latter, but "clouds of dust," which, according to the length of the cloud, its height and density, tend to show the strength and actual composition of the force, and line of direction of its march ; and last, and not least, is not the sound of firing the most unmistakable signal of the presence of troops ?

e. That it is Too Slow and Unreliable for any Practical Good.—We certainly do not pretend to transmit messages at telegraphic speed; but with highly-trained men such as we now have, an average rate of twelve to fourteen words a minute on the heliograph or lamp, and fifteen to eighteen on the semaphore, can be relied upon. In India, a country essentially favourable for signalling, the rates on the heliograph run much higher. Flag signalling is certainly slow and laborious, but its use is more or less restricted to sunless countries like our own, where unfortunately we have to resort to it to a considerable extent. A new Army Order has recently come out, directing three days' practice weekly all the year round. If this is acted on in the right spirit we may anticipate most excellent results, and the regimental standard of efficiency will no longer be regulated, I trust, by the estimate that some commanding officers form of the value of signalling.

Most of these arguments raised by our critics appear to me to be based almost entirely from experience gained of signalling as carried out in this country, and for that reason I venture to say they are somewhat chimerical. I have no desire to extol or advocate the value of signalling to the exclusion or supersession of other methods that have been tested and found efficient; on the contrary, I am quite content to think that numerous acknowledged authorities upon military matters—men whose opinions deserve respect—have constantly recognised its utility and importance.

4. *Mounted Orderlies.*—The disadvantages offered by the employment of mounted orderlies are :—That it takes away from the ranks men that we can ill afford to spare ; the contingency of capture or being killed ; the horse breaking down ; or the orderly losing his way. On the other hand, it is the most accurate way of conveying intelligence and orders in in the field, as the written messages they carry, no matter what their length and number may be, are signed by the sender, and personally delivered by the bearer, who returns with an acknowledgement bearing the signature of the receiver. Their use is restricted by the distance, time, and number of such men required.

In the German Army specially-trained men are employed for this purpose, in order to relieve the cavalry from the duty of providing orderlies and messengers for the higher staffs, and infantry units.

5. *Cyclists.*—It is unnecessary to enlarge on the advantages of cyclist orderlies, they are now so well known and recognised by all ; but I would rather call attention to the want of some such means of locomotion for infantry signallers. One of the most urgent requirements of modern

warfare is the power to transmit intelligence with the greatest celerity to and from all parts of the theatre of war, and for this reason it is an absolute necessity for signallers to be able to transport themselves with rapidity from place to place as occasion demands. Owing at present to their inability to fulfil these conditions, their utility is greatly underrated and at times misapplied, and with troops in motion their employment is practically discarded more or less on the grounds of humanity. There is no reason why the dual capacity of orderlies and signallers should not be combined, thereby reducing the number of men taken from the ranks; for it may be inferred that when signalling is feasible cyclist orderlies would not be required, and *vice versâ*.

Training, Schools of Instruction, and Apparatus.

I do not propose to occupy the limited time at your disposal with a tedious description of the above details, as they are all fully described in the "Signalling Instructions," but merely to draw attention to some of the most important points.

There are three schools of instruction for the training of officers and non-commissioned officers, namely at Aldershot, Kasauli, and Poona.

In England we work entirely on the same lines as the Telegraph Battalion (with the exception of a few minor details); this is absolutely necessary, so that on service there can be no confusion or misunderstanding between the two departments.

In India the system of classifying messages, counting words, figures, ciphers, and signalling time (*i.e.*, the twenty-four-hour system), conforms to that adopted in the Indian Telegraph Department, and in this respect there is a notable difference between the system employed at Home and in the Colonies, and the Indian method, and so long as the Indian and English telegraph system are not assimilated this difference must exist. At Home, in India, and the Colonies, the standard of efficiency required before regimental signallers and supernumeraries can be classified as efficient is as follows:—

Home and Colonies.

Reading and sending from	Heliograph - - - -	at 12	words a minute.
	Lamp and lime-light - -	„ 12	
	Large flag - - - -	„ 9	
	Small flag - - - -	„ 12	
	Semaphore - - - -	„ 15	
	Sounder - - - -	„ 12	

India.

Reading and sending from	Heliograph - - - -	at 10	words a minute.
	Lamp - - - - -	„ 10	
	Small flag - - - -	„ 10	

In the Native Army the "Standard of Efficiency," and course of instruction, is similar to that laid down for British troops in India, and is carried out in English, as signalling in the vernacular is prohibited. I may here remark that the Natives of the Madras Army, due to their

knowledge of our language, have always proved themselves adepts in signalling.

The number of signallers in each Native cavalry regiment and battalion of infantry is sixteen, of whom the eight best receive each a bonus of 5 rupees annually.

In each Native mountain battery, six signallers are maintained, the three best also receiving a bonus of 5 rupees annually.

The apparatus used in India differs somewhat from that employed at Home and the Colonies. For night work the Begbie "C C" or "B B" lamp, takes the place of our lime-light and hand lamp, and its range on an ordinarily clear night is approximately as under :—

	With naked eye.	Through glasses.
"B B" pattern - -	10 miles -	20 miles
"C C" pattern - -	20 miles -	40 miles

During the late Chitral expedition, the "C C" lamp was used up to thirty-seven miles.

India being a land of sun, the heliograph is *facile princeps* the signalling instrument. Its range under favourable conditions of atmosphere being determined by the rule, that any two points if visible to each other can be brought into communication. As an instance of long-range heliographing, I would mention that on the 17th September, 1894, Captain W. A. Glassford, of the "Signal Corps," U.S. Army, succeeded in keeping up communication between Mount Ellen, Utah, and Mount Uncompahgre, Colorado, 183 miles apart, by means of heliographs carrying mirrors 8 inches square.

The 5-inch heliograph is the present service pattern, yet in many of our Indian expeditions a larger mirror has been employed, ranging up to 12 inches in diameter; one of the latter description was used at Sheikbudin during the operations with the Waziristan Field Force, 1894-95.

For cavalry I think a 3-inch helio would be of special value; being light, portable, and very handy, it would be just the thing for constantly-moving stations, during scouting, rapid reconnaissance operations, and also for communicating between short distances, advanced and rear-guards, and flanking patrols.

The heliograph can be used with the greatest advantage as a search-light, for calling the attention of fixed or moving stations, by a rapidly-moving force, or by detached columns operating in a country where the telegraph is temporarily impracticable.

The lime-light is a most valuable signalling apparatus, for in the event of the line becoming blocked with messages during the daytime, we have at once a powerful and reliable method of communicating by night.

The semaphore system is a rapid and simple method of signalling at short distances, requiring two small flags only; or, in the absence of flags, the arms are sufficient, provided the intervening distance between the parties is not too great. It has the advantage that it is unnecessary to encipher a message, and can be used by signal parties under cover in the attacking line to connect up with the supports and reserves.

At Aldershot we introduced last year for the first time a course of instruction in elementary field telegraphy and telephony, and I may say the result was highly satisfactory and promising. The subject of telegraphy and army signalling has so often been discussed before in this Institution that I should like to say a few words on it, in order to make it understood how far we are prepared to go. The "Manual of Instruction in Army Telegraphy" states briefly that the limit to which the telegraph battalion can keep up communication for two army corps is reached at brigade headquarters; it is from there that we propose to carry out a regimental or brigade system of telegraphy or telephony, and do all the brigade work in the field.

By thus expanding our present signalling organisation, we are able also, by laying a short telegraph line, to overcome such obstacles as a thick wood, dense fog, boundless plain, or other configuration of the ground which, with our present equipment, often precludes our making connection between distant stations. Such a system has been adopted in Germany, Austria, and France, and all the recent foreign manœuvre reports testify to the great advantages gained by training specially-selected cavalry and infantry men for this work. I give one instance to show what is done abroad:—In the Austrian cavalry every regiment has a light field telegraph, equipped with a battery, key and drum, containing from 2 to 4 miles of insulated cable wire; the electric current is supplied by Leclanché cells (similar to our own), contained in boxes 8 inches square: two N.C.O.'s and two men per regiment are trained to work it. Owing to the densely-wooded nature of the country in Burma, it was found necessary to cut belts through the jungle in order to carry on signalling communication between the several posts; with a light service telegraph equipment this would have been obviated in many cases.

Organisation and Signalling Arrangements for War.

The ordinary organisation is "regimental," but under certain circumstances arrangements are provided, by which brigade and divisional signalling companies can be formed.

The question of a "Special Signal Corps," distinct from regimental signallers, has been advocated time after time; and although personally I am in favour of such a scheme, on the grounds of increased efficiency, and facilitating signalling arrangements both as regards the *personnel* and *matériel* connected with signalling in the field, yet the creation of such a permanent corps would not only be very expensive, but it is doubtful whether we should get our full value out of it. The "Signal Corps" in the American Army is generally quoted as a precedent for us to follow; but it must be remembered that in addition to its signalling duties, it has entire charge of all the permanent military telegraph lines, aggregating nearly a thousand miles in length, in the United States. On the other hand, what we require is, that a knowledge of signalling should be disseminated generally throughout our Army, in order that units quartered in all parts of the Empire should be able to take the field at a moment's notice, and not be dependent upon a specially-trained corps.

The war establishment of signallers for a cavalry regiment is 1 sergeant and 12 rank and file; for an infantry battalion, 1 sergeant and 8 rank and file. From these numbers we get the following calculations:—

	Officers.	Sergts.	Rank and File.
Infantry Brigade—			
4 Battalions	1	4	32
Infantry Division—			
2 Brigades	3	8	64
Cavalry Brigade—			
3 Regiments	1	3	36
Cavalry Division—			
2 Brigades	3	6	72
Army Corps—			
25 Battalions	10	25	200

Should circumstances arise which make it desirable, a brigade or divisional signalling company, as above, may be formed at any time; and in the case of an army corps, that of a corps-signalling battalion, all under specially selected officers. The Director of Signalling with his corps-signalling battalion, being on the Headquarter Staff of the Army Corps, would receive his orders direct from the Chief of the Staff.

Provision is made for two special signalling companies to be formed on mobilisation, for service abroad with small expeditions intended for savage warfare, or in semi-civilised countries; and, if necessary, in civilised countries favourable to signalling operations. The equipment for these special companies is kept ready for use at Aldershot.

For a brigade signalling company, a special extra equipment as under is stored with the mobilisation equipment of the brigade staff to which it belongs, namely:—

2 Panniers.
2 Limelight lamps complete with accessories.
2 Helios complete.
2 Telescopes.

The pannier, with kit complete, weighs 174 lbs., and is carried on a pack animal, and is in charge of the brigade signalling officer, who is responsible to the G.O.C. the brigade that it is always to the front and ready for immediate use.

Provision is also made for regimental units to carry the same stores as laid down in the brigade signalling equipment, together with a small reserve of consumable articles carried in the store wagon of the units.

The hand lamps are now packed in boxes and carried in the S.A.A. wagons which accompany cavalry units, or in the tool carts of battalions. By this arrangement the lamps are always to the front and ready for night use if required.

A general reserve of signalling equipment calculated to last three months for one army corps and cavalry brigade, is kept at the base of operations or advance depôt.

Application of Signalling in the Field.

In discussing the employment of signalling in tactical and strategical operations in the field, we at once approach somewhat debatable ground. Tactical signalling applies generally to that connected with moving stations, and with troops in motion, and which should therefore be carried out by mounted signallers whether on horses or bicycles; and strategical signalling to semi-permanent and permanent stations which being more or less stationary can be worked by dismounted signallers.

The signalling organisation must provide for the *personnel* and *matériel* necessary to maintain not only all communication in the field for minor purposes, but also in special cases to supplement, and under certain circumstances replace, the Army telegraphs.

A golden rule to be borne in mind by all officers is, that signalling should never be resorted to unless time can be saved and some specific advantage gained by its use, and that no more signallers should be employed than are absolutely required. A judicious combination of the various methods for conveying orders may often be found the best, and the most complete system of communication will generally be obtained.

During the actual movement of columns along parallel roads, lateral intercourse by signalling becomes a most difficult matter, and should therefore be restricted during the periodical halts arranged beforehand, so that all parts of the force should halt on a previously determined line, moving forward simultaneously after each successive halt; if this is done signalling can be relied upon.

In many cases stations can at first be selected from a careful study of the map, and their dispositions altered afterwards; or opportunities may occur for examining the ground previous to occupation; but on service this cannot always be calculated on, nor can maps be procured on a sufficiently large scale, and in these contingencies the compass will prove of the greatest assistance.

To lay down hard and fast rules and minute details as to how, when, and where signalling should be employed, is not my intention, its success being controlled by the nature of the country, state of the weather, and above all, common sense.

The diagrams I have prepared are intended to illustrate in a practical manner, not only signalling operations that have actually taken place, but to exemplify typically how signalling can be used under certain conditions. In the former case I have selected as being of interest a few of our recent expeditions in India, as showing that, in spite of defects and disadvantages, signalling offers a good and often indisputable auxiliary for conveying intelligence.

It would appear that signalling really comes into play at distances and under circumstances where mounted messengers are comparatively useless. For instance, the battalion is effectually commanded by the voice, and when extended the whistle and conventional signals laid down in the infantry drill should suffice for all requirements.

With a brigade: staff officers, aides-de-camp, and orderly officers are

best employed for conveying orders. Circumstances may occur incidental with the nature of the operations necessitating a signal party with each commanding officer; but so long as the brigade remains intact the fewer signallers employed the better, and any signalling required in the first line should be done by semaphore. In the case of a division, the approximate frontage of which when formed for attack is about one mile, occasions will arise when it will be of advantage for the G.O.C. to signal to his brigadiers, and therefore two signal parties should be told off for the divisional general, and three signallers assigned to each brigadier. It is, however, when we come to deal with large numbers of men in the field that the need of communication by signalling becomes apparent, owing to the large extent of ground then covered and the time consequently saved by its use.

The following are some of the situations in which signalling may be of use with an army in the field:—

a. In Attack and Defence.—If we take the case of two army corps side by side, with one of which it is intended to assault, and the other to act as a supporting force, the frontage would be about four miles. A central position commanding the zone of operations would be selected by the G.O.C. from whence he could watch the movements of the troops and be able to communicate with his army corps commanders.

Each army corps would require ten distinct signal parties, distributed in the following manner:—One group with each brigadier, one with each divisional general, and one with the G.O.C. the army corps.

The strength of each group would depend on the number of headquarter units it would have to work with *simultaneously*. Thus the G.O.C. each army corps would require four parties of three signallers each, so as to work with the G.O.C., and his three divisional generals at the same time. A divisional headquarter group would consist of nine signallers, one party to work with each brigadier, and one to work with the G.O.C. the army corps. The G.O.C. himself would require only two signal parties of three men each, so as to communicate respectively with the two army corps commanders.

The groups at each brigade headquarters could be worked with three signallers, as communication would only have to be maintained with the divisional headquarter party.

In addition to the above, arrangements would have to be made for keeping up communication with commanders of the corps artillery and cavalry.

It is probable that the field telegraph would connect the headquarters of the G.O.C. with those of army corps and divisional headquarters previous to the action; but how far these lines would follow the troops advancing to the attack is somewhat problematical. At the terminal telegraph stations, signallers and orderlies would be located: the former to receive reports signalled from the front, as well as to transmit orders to the front which have been received by wire from headquarters; and in the event of a breakdown, to replace the telegraph.

In order to give timely notice of the enemy's turning movements, and to keep touch with those executed by a commander himself, signal parties should be posted far away on the flanks with the troops specially detailed for this purpose, and every precaution taken for rapidly transmitting information to headquarters.

The battle of Königgrätz supplies an excellent illustration as showing the want of inter-communication between divided forces on the field of battle. At 1 p.m. on the day in question, the 1st Prussian Army Corps under Prince Frederick Charles, had brought all its available troops into action without making any impression on the Austrian centre, and was fighting hard to retain the position it had won; and on its right the Army of the Elbe had likewise been checked in its advance.

It was at this critical period, we are told, that the Prussian commanders looked anxiously to the left for the coming of the Crown Prince; but the latter, with two corps, was already on the field at 12.30 p.m., and his artillery actually engaged with the batteries on the Austrian right at that hour, and all within easy signalling distance of the Prussian headquarters, who were in complete ignorance of the state of affairs. On the Austrian side, had some such system as suggested above been carried out, much fuller and earlier information as to the Crown Prince's movements would have been obtained, and the news of the advance of the 2nd Prussian Army Corps would have been received earlier in the day, thus giving Benedek more time to prepare to resist the attack on his right flank.

For a force in defence the same distribution of signallers on similar lines should be arranged by the director of signalling in conjunction with the divisional and brigade signalling officers so as to ensure rapid communication from front to rear and from flank to flank of the position; for unless these precautions are taken beforehand confusion may arise at the most critical moment. Signallers should also be attached to the advanced posts in order to report the movements of the enemy, and thus enable the commander of the defending force to issue his instructions.

On the defence, if time allowed, telegraphic communication might be established with all parts of the position; but in the event of a retreat, or worse still, a general rout, there is always the danger of the troops becoming entangled and mixed up with the wire and the wagons, unless due notice has been given to reel up before the retirement takes place.

I would call your attention for a moment to a practical application of combined telegraphy and signalling in the field for a force in defence. The diagram represents the battle-field of Gravelotte, but the position of the troops shown thereon has no intentional reference to the distribution of troops engaged on the day of the battle.

b. During the Passage of a River.—Owing to the fact that rivers are, as a rule, formidable obstacles, especially when the passage of them is opposed by an energetic resistance, and the crossing has to be undertaken on rafts and in boats; moreover, that some method of communication must be provided during the operation of transporting troops from

one bank to another, transmitting orders across the river, conducting the further advance and movements of the covering-party, and issuing instructions to the troops detailed to cover the passage of the latter; the simple plan of signalling appears specially applicable and indispensable on such occasions.

If we take the passage of the Danube in 1877 as an example, we may infer from it that in future, during similar operations, signalling will be of the greatest value, enabling the commander to communicate at will his orders and instructions, irrespective of the side of the river he establishes his headquarters on, during the passage.

In the present case, the 8th Russian Corps, about 25,000 strong, was detailed to force the passage between Zimnitza and Sistova, the river at this point being about 2,000 yards broad. The 1st Division, under General Dragomiroff, composed of 15,000 infantry, crossed over in six detachments, each of 2,500 men, on 104 pontoon boats and 100 ordinary boats and rafts. The first detachment started to row over at 1 o'clock on the morning of the 27th June; at 5 a.m. the General crossed over himself to the Turkish shore, and at that hour he had with him about 5,000 men; the remainder of his division, together with the 2nd Division of the same corps, consisting of about 10,000 infantry, under General Radetzy, being on the other bank. At 11 a.m. General Dragomiroff, with 10,000 men, ordered a general advance against the Turkish position, the advance being covered by the Russian batteries on the Zimnitza, or north bank of the river. At 9 o'clock on the evening of the same day, the entire corps had crossed, and secured the passage of the river after twenty hours of hard fighting. This brief summary of events is sufficient to show, I hope, during these operations, and more especially during the attack against the Turkish position, the necessity for uninterrupted communication between the forces divided by the river.

During the action on the Panjkora river in the Chitral expedition, signalling was employed to a very great extent between the G.O.C. and the Guides, and also with all units of the force then engaged.

c. Between Permanent Stations, Harbour Defences, and Forts.—The fact that communication by signalling can be carried on over the enemy's head, makes it possible to correspond from an invested place with a relieving army; and this point is of special importance in connection with fortified localities and fortresses. The argument that all fortresses are nowadays connected by telegraph or telephone wires laid *above* or *below* the ground, does not lessen the fact that their detection and destruction by chance or treachery is always possible, and communication by signalling then affords the only practical solution to the difficulty.

This is so fully recognised in the Russian Army, that, on mobilisation, six fortress telegraph detachments are formed, their duties being to work the military telegraphs and telephones connecting the forts, and also the heliographs in the fortresses in which they are stationed. These detachments are of three classes:—1st Class, for fortresses with 40 to 66 miles of line and 20 to 30 telegraph and heliograph stations; 2nd Class, for those

with 17 to 40 miles of line and 10 to 20 telegraph and heliograph stations; the 3rd Class, for smaller places.

The harbour defences of Portsmouth are shown on the diagram. All are in signalling communication with each other, and those on the coast-line can readily correspond with our fleet off Spithead. From Fort Cumberland we get Ashey Down, Isle of Wight, and from there again we are in touch with most of the prominent features in the island.

d. Advanced and Rear Guards and Marching Columns.—Circumstances may necessitate the movement of an army corps along a single road, in which case it may be necessary to maintain signalling communication, not only between the different parts of the advanced guard and main body, the G.O.C. and commanders of divisions and brigades, but even to the tail of the column and the rear guard.

An army corps numbers, roughly, 35,000 men, and allowing for opening out, the fighting portion alone occupies in a single column a length of over eleven miles; if to this is added the baggage, trains, etc., we shall get something like twenty-three miles of road or more, covered by the troops and transport wagons. And it must be remembered also that an order from the head of the column will take an hour to reach the rear of the fighting portion of the corps.

As a general rule it will I think be found, more especially in this country, that owing to the tortuous nature of the roads, little use can be made of direct signalling for any appreciable distance along the main roads occupied by the marching columns. A safer expedient appears to be, in the selection of a few conspicuous and well-defined positions and hills, bordering and adjacent to the general line of advance or retreat. These should be temporarily occupied by special signal parties, who would withdraw and rejoin their corps or act according to instructions, after the tail of the column had passed their respective posts, the usual distribution of signallers being at the same time allotted to the advanced guard, G.O.C., and commanders of the larger units. In the most enclosed and wooded country where signalling at first sight would appear to be utterly futile, many points will occur along the road traversed by the columns from which the signallers will be able to "pick up" those of the special parties, and transmit orders from post to post to their destination.

It is scarcely necessary to say that the men composing these special parties should, by the very nature of the work required from them, be mounted, and should march with the vanguard, so as to take up their successive positions as rapidly as possible.

e. During a Cavalry Reconnaissance. — Here the main object of employing signalling is, not merely to save time and horseflesh, but to economise as far as possible the number of men usually required with the communicating and connecting posts, and as cyclist orderlies. It is, therefore, of the greatest importance that the cavalry signallers should be highly trained, and capable of turning to good account the numerous opportunities that are sure to occur during the work of reconnoitring and screening.

The tactical scheme set by the Home District Military Society, and carried out in this Institution on the 29th January last, is a good example of the method now adopted of screening the "concentration of an army," and "reconnoitring an enemy" by the cavalry division.

The division consisted of two brigades of three regiments each, and each regiment of three squadrons.

The scheme provided for five distinct stages, but it will be quite sufficient for our purpose if we take the position of the division at the second and fourth stage.

In such a formation, as above described, the signal parties might have been disposed as follows :—

With the G.O.C. the division who was with the reserve brigade, two parties or six men.

With the headquarters of the advanced brigade, three parties or nine men.

With the support of the right advanced regiment, three parties or nine men ; and the same with the support of the left advanced regiment.

Two parties or six men with each advanced squadron, and a party of three men to each of the four special patrols, if considered advisable.

"General Idea."

A hostile army having landed on the south coast, a concentration is taking place at Aldershot.

* * * *

Corps Order.

The G.O.C. Cavalry Division.

The 1st Army Corps marches at 6 p.m. to-morrow on Woolmer ; screen the advance, and ascertain and report movements of the enemy. If necessary, concentrate and drive back hostile cavalry.

Division Orders, 1st June.

In compliance with 1st Army Corps order, the division will form up in screen formation at 3.30 a.m., to move off at 4 a.m.

Reserve brigade at Cavalry Jumps, Aldershot.

Advanced brigade, headquarters at Farnham (north end).

Support of right advanced regiment at Bentley.

Support of left advanced regiment at Elstead.

Advanced squadrons, right regiment, at Steam Farm, and at Batt's Corner.

Advanced squadrons, left regiment, at Kettlebury Hill, and at Lea Farm.

* * * *

(*Vide* diagram for position of troops and signalling stations.)

Second Stage.

Reserve brigade to Frensham Pond.

Advanced brigade to Headley Common.

Supports of advanced regiments to Oakwood Farm and Haslemere.

Advanced squadrons to Newton Valence, Greatham, Liphook Railway Station, and one-and-a-half miles south of Haslemere, on the road to Fernhurst.

(*Vide* diagram.)

FOURTH STAGE.

Reserve brigade to Petersfield.

Advanced brigade to north end of War Down.

Supports of advanced regiments to Chidden Down and North Mardon.

Advanced squadrons to south end of Bushey Down Racecourse, Clanfield, Compton, and Chilgrove.

(*Vide* diagram.)

So far communication by signalling between the component parts of the division has been shown to be feasible, but in addition to this it is necessary that communication between the commander of the cavalry division and the G.O.C. at Aldershot be maintained. For this purpose provision is made in the Cavalry Regulations, whereby connecting posts, consisting from six to eight men, are placed on the main lines of communication, and about five miles apart.

If we take the position of the headquarters of the division at the Fourth Stage, which may be said to have been reached about 8.30 a.m., the distance between the G.O.C. cavalry division and G.O.C. Aldershot, is from nineteen to twenty miles, requiring four connecting posts, consisting of twenty-four or thirty-two non-commissioned officers and men.

To keep touch between Petersfield and Aldershot, the signalling arrangements might be as follows, but everything would depend on the state of the weather:—

By Flag Signalling.		By Helio.	
Petersfield - -	2 Signallers.	Petersfield - -	2
Warren Corner -	4 ,,	Warren Corner - -	4
Weavers Down -	4 ,,	Hungry Hill - -	4
Binstead - -	4 ,,		
Hungry Hill -	4 ,,		
	18		10

Again, if we take the time saved by employing signalling as against mounted orderlies, the advantage is still in favour of the former method.

Assuming a message of eighteen words is sent from G.O.C. Cavalry Division at Petersfield, to G.O.C. at Aldershot, by signalling, even if the flag (our slowest instrument for signalling purposes) was employed, it would reach its destination in fifteen minutes, that is allowing that the message is sent at the rate of six words a minute, and that there is three minutes' delay at each transmitting station.

If we allow the orderlies at each successive connecting post to go at twelve miles an hour, or one mile in five minutes, one hour and forty minutes would elapse before the message is handed to the G.O.C. at Aldershot.

SIGNALLING OPERATIONS WITH THE CHITRAL RELIEF FORCE, 1895.

I think the map before you is almost sufficient and conclusive evidence of the use made of signalling in India. The distance from Jalala to Chitral in a bee line is about 115 miles, and during the expetion 141 British and 129 Native signallers were employed, and over 100 permanent stations occupied from time to time, the total number of messages sent being 55,590 up to the 14th September, 1895. The longest distance signalled direct by heliograph was, I believe, eighty-seven miles.

An almost uninterrupted line of signalling was maintained in advance of the telegraph from Jalala to Chitral, and by this means messages were sent from the furthest portion of the force to the terminal telegraph office. The official report adds:—"This entailed very heavy work at "times on the signallers, as besides marching to their new station in "advance, they had on arrival to commence work at once, and on a "great many occasions it continued during the day and night. Brigades "in rear during the advance to Chitral always maintained communication "between themselves at the various posts. After the arrival of the "3rd Brigade at Chitral, when brigades settled down on the line, visual "signalling was maintained wherever considered necessary. By this "means nearly all local work was taken off the Telegraph Department."

During the several engagements which took place on the advance to Chitral, and more especially during the action at the Malakand Pass, signalling was carried out with the greatest success, and communication maintained by it, between the G.O.C. the Relief Force and his brigadiers and every unit engaged. The extent of the position attacked was one-and-a-half miles, and the height of the pass about 3,500 feet.

MIRANZAI EXPEDITION, 1891.

The operations conducted against the Orakzai tribe on the Miranzai frontier were divided into two distinct phases. The first phase, extending from the 21st January, 1891, to the 1st March, was carried out entirely by troops from the Native Army, and only Native signallers were employed. The field force was divided into three columns, the base of operations being Kohat; and Hangu the advanced depôt; the terminal telegraph office being at the former station. During the first phase, the operations were confined more or less to the eastern portion of the country, and the prominent feature, Lakka (4,925 feet), was selected as a central transmitting station, from which all messages were heliographed direct to Kohat (1,768 feet), a distance of twenty-five miles, and from there again the wire passed them on to Calcutta. With detached columns constantly on the move, and invariably in different directions, it was quite impossible to expect that inter-communication between them could be carried out except by signalling, and partly for this reason the telegraph remained at Kohat. During the second phase of the expedition a line was laid from Kohat to Gulistan, between Hangu and Sangar it was constantly being cut, and several miles of wire taken away. A curious fact con-

nected with this is, that at first a cable line was laid, but when replaced by an air line the natives ceased to destroy it.

During the second phase of the campaign, the expedition was organised as before in three columns, with the addition of one British regiment, and the theatre of war was then carried on in the western portion of the country. Besides the Native signallers, four sergeants and twenty-four privates from various English regiments were placed at the disposal of the signalling officer. The country was well adapted for signalling operations, more especially the high mountain ridges along the Samana range, which attained the following altitudes :—

Tsalai - - - - - - -	5,150 feet.
Sangar - - - - - - -	5,680 ,,
Mastan - - - - - - -	6,230 ,,
Gulistan - - - - - - -	6,152 ,,
Khanki Bazar - - - - - -	5,750 ,,
Mamuzai Bazar - - - - -	6,650 ,,

As in the Chitral expedition, an uninterrupted line of signalling was maintained in advance of the telegraph throughout the second phase, which commenced on the 16th April, 1891, and lasted up to the 22nd May. The terminal telegraph office at Gulistan was opened on the 6th May, a signal party having been established there on the 21st April.

During the advance from Gulistan into the Upper Khanki Valley, from the 10th to the 15th May, communication with the headquarters at Mastan by signalling was carried out with excellent results, the heliograph working direct with Mamuzai Bazar, Kandi Mishti, and Alisherzai Kotal.

At Hangu the telegraph was opened on the 17th April, and remained as such for thirty-one days, during which time 3,433 messages were sent, the daily average being 110. This number includes a very heavy percentage of heliograph and lamp messages received from the front.

Until the arrival of the telegraph at Gulistan the strain on the signallers was most severe, the men working from fourteen to eighteen hours daily, due entirely to the inadequate number available; on the other hand, it is satisfactory to record that most of the telegraph offices were worked entirely by military signallers, thus showing the necessity for their being trained in this particular branch. That the work they did was somewhat of a high order, can be gathered from the official report of the officer in charge of the telegraph, who says :—"My working party "and the signallers were all military men except two. Military signaller "Private Franklin, Wilts Regiment, fitted up his office at Mastan and "worked it *single-handed* from 2.30 p.m. 4th May to 7.30 p.m. 5th May, "and disposed of 120 to 130 messages. I would also mention Military "Signaller Private Charlton, Wilts Regiment, who was on duty over "thirty hours on one occasion."

It is no exaggeration to say that the success of this expedition was greatly secured by the intelligent use of signalling, and by the highly-trained signallers, who not only carried on their own special work, but largely assisted the telegraph offices.

General Lockhart, who was in command of the troops throughout the entire expedition, has recorded his opinion in his official report of the work done by the signallers in the following words:—"The manage-" ment of this important service has left nothing to be desired. I wish " to record here my high appreciation of the work done by all ranks of " signallers, who have been by far the hardest worked men in the force."

Conclusion.

In conclusion, I would say that I am aware that my lecture is incomplete in many interesting details, which have been necessarily omitted in order to keep it within reasonable dimensions, and the allotted time. Let us, however, never lose sight of the fact, that signallers are of little use without training, and unless they keep up their practice continually they soon lose all their efficiency and expertness, and consequently do not attain that proficiency which is so essentially necessary for the requirements of modern warfare.

APPENDIX.

Notes on some Continental Systems of Signalling.

Austria-Hungary.

In each corps (except the 5th, 6th, 7th, and 11th) is a Field-Signal-Abtheilung, consisting of 2 mounted subalterns, 9 non-commissioned officers, and 16 men, drawn from the infantry. A fresh Abtheilung is by way of being trained every year for two months.

The Abtheilung consists of 4 (on occasion, 5) signal stations, each station numbering 1 sergeant, 1 other N.C.O. as "signal observer," 3 corporals or privates as signallers, and an apparatus. Signallers are distinguished by a black and yellow arm-band.

The idea in Austria is that signalling is only of use in hilly country. In the plains they employ field telegraphs, telephones, cyclists, and mounted orderlies.

The apparatus by day is of the semaphore type, consisting of a mast about 10 feet high secured in the ground by guns, the signal medium being a wooden framework in the form of an isosceles triangle, covered with canvas—black on one side, white on the other. The triangle's base is 4 feet 4 inches long, and each side double that length. One of the triangle's twelve positions—point upwards, downwards, or to one side, etc.—represents a digit (corresponding to a letter of the alphabet), and combinations of these numbers with a circular target at the top give the remaining letters of the alphabet.

At night, lamps are hung at each angle of the triangle, and the circular target is represented by a fourth lamp at least five paces from the mast.

The apparatus, carried amongst four men, weighs altogether about 61½ lbs.

There is no signalling with the small flag as with us, but for signalling to the Navy the naval code of flags is used on the mast.

Experiments are being carried out with various forms of lamp, as the present system of signalling is not deemed quite satisfactory.

FRANCE.

The regulations of 1887 directed that eight signallers and eight "élèves signalleurs" or supernumeraries should be trained in every infantry battalion. The instruction was carried out by a sergeant or corporal selected from the signallers, the adjutant being responsible for their training. The equipment consisted of four pairs of flags, and four lamps with shutter arrangement, the Morse alphabet being used for carrying on all correspondence, which differs from our own only by the addition of the letters Ch and E.

In February, 1892, the signallers who were previously maintained with every body of troops were done away with, excepting those in the Vosges Division and in the 14th and 15th Army Corps, in which, however, the number of signallers was reduced by one-half.

Flag signalling has now been abolished and small discs have taken their place. The usual apparatus for day and night work is the Mangin lantern, which is constructed to use either a petroleum lamp or sunlight. This lamp, as well as the Tychsen, which is somewhat an improvement on the Mangin, are fully described in the JOURNAL of the R.U.S.I. for February, 1896.

In every cavalry regiment there are six telegraphists (two N.C.O.'s and four privates), chosen from men who have been telegraphists in civil life, or who have been through a course of instruction at the Cavalry School of Saumur.

In each brigade (of two regiments) the telegraphists are, on service, united into a "group," under the command of the senior N.C.O.

The brigade groups of a division are formed into a "light section," which is placed in charge of an officer of the Department of Military Telegraphy, who receives his orders from the divisional chief of the staff.

When two or more cavalry divisions are grouped together under one command, an officer of the Department of Military Telegraphy has charge, under the orders of the chief of the staff, of the entire light telegraph service.

During marches and operations, the troops charged with the duty of reconnaissance are accompanied by one or more detachments from the light telegraph section, whose special duty it is to preserve communication with the main body as long as possible, either by means of existing telegraph lines, or by optical signalling. Each brigade group has also $2\frac{1}{2}$ miles of wire, so that the light telegraph section of a division has about $7\frac{1}{2}$ miles.

GERMANY.

Signalling is not practised in the German Army, reliance being solely placed on mounted orderlies and cyclists for communication of orders and reports.[1]

[1] Since the delivery of this lecture, a report has been received that the semaphore system has been introduced in the German Army.—C. K.

ITALY.

The specialist company undertakes the charge of balloons, optical telegraphy, or long-distance signalling by heliograph, electric light, and other lights. Signalling, as in our Army, by flags is not used. The alphabet employed for all signalling is the Morse. During the manœuvres of 1892, the heliograph was used, but chiefly for administrative purposes by the directing staff, and not by the troops in action; signalling was carried on by night with lamps.

RUSSIA.

No system of field flag signalling has been adopted in the Russian Army. In the Asiatic companies detachments of heliographists have been formed, and heliographs form also a portion of the equipment of field telegraph parks, fortress telegraph detachments, and railway troops.

In the establishments of the Transcaspian and West Siberian Companies are included detachments of heliographists, each consisting of 1 staff captain, 1 senior and 1 junior under-officer, and 20 privates. The Turkestan half-battalion includes a detachment of heliographists of 1 staff captain, 2 under-officers, and 18 privates.

In the six field telegraph parks, besides the usual equipment, there are in each, two heliographs complete and two lamps for night signalling.

SWITZERLAND.

Signalling is carried out in the Swiss Army practically on the same lines, and with the same equipment as in Austria.

UNITED STATES.

The American method of signalling is carried on by means of flag, heliostat, lamp, torches, ball, or collapsing drum. Their principal object seems to be to get a moderate amount of speed with a great range of vision, *i.e.*, to sacrifice speed to distance; and where the area of operations is large, and the number of troops employed considerable, in nine cases out of ten the value of signalling would not so much depend (after a fair rate of sending had been attained) on transmitting messages with great speed, but rather on being able to bridge long distances by means of it.

Their flags are of three sizes 6′, 4′, 2′ square, with centres of 2′, 16″, and 8″ respectively (also square).

1. The 6′ size is used for the longest distances.
2. 4′ for field-work.
3. 2′ for practice and field-work; and with the longest staff, *i.e.*, 16 staff, when the signaller wishes to make signals while under shelter.

The staff is of three or four joints, each four feet in length; several joints can be used together.

With the naked eye in clear atmosphere:—6′ can be seen about six miles; 4′ can be seen about five miles; 2′ can be seen about three miles. All about twice the distance when using a telescope.

Great stress is laid by them on swinging the flag exactly at right angles to the line of vision, and on the signaller standing perfectly square with the station he is sending to.

The preliminary and principal practice of the recruit is done with a wand 14′ long, and an inch and a half thick.

The staff is held vertically in front of the centre of the body, and lowered nearly to the ground for each dot or dash; there is no pause between the elements of a letter, but each group of elements "must be made as rapidly as the strength and skill of the operator will permit." Dots are made to the right of the operator. Dashes to the left.

The "end of word" is marked by a "front" motion, the flag being lowered to the ground "in the plane of the line of vision," preceded and followed by a pause equivalent to that made between letters. "A slight pause will be made between letters."

The American alphabet has not the same arrangement of elements as our own for all the letters; thus L and numeral 0 are represented by long dash, to distinguish them from T, short dash; the difference is made with the flag by accentuating the two former by a slight pause at the lowest point of dip of the flag.

Some of the letters are what is called spaced; thus O is made dot, space, dot; the space being represented by the front motion.

At first the recruits are exercised in swinging the flag "not more than ten minutes at a time to the right and left without pause, with short intervals of rest." "They are not to move the flag slightly to one side or the other before its formation is commenced." Numerals are sent with letters in their practice groups.

The mirror of the heliostat is square in preference to round, as containing one-fourth more reflecting surface for practically the same packing space.

For permanent stations an 8-inch mirror is used, its range in a favourable atmosphere only dependent on the convexity of the earth.

The lamp consists of a metal case containing a lamp and chimney; when improved, the latter will be dispensed with. The reflector is parabolic; it has at present a flap shutter. The Oatman lantern has been read at a distance of 23 miles with a glass. Though a parabolic reflector saves most light, a 5-inch dioptric lens can be read at 8 miles with the naked eye.

There are two torches: the flying torch, about 18 inches in length, 1½ inches in diameter, which is attached to the staff by copper clamps, and the foot-torch, immediately behind which the torchman stands. The oil in them should be replenished every fifteen minutes. When swung on a 12-foot staff it may be read with a powerful telescope 15 miles; with the naked eye, 4 or 5 miles.

Brevet-Major R. A. BROWNE (1st Bn. Border Regiment):—Sir Redvers Buller and Gentlemen, I had no expectation of being called upon to open the discussion on the paper which we have heard. I think we must all have been struck with the way in which the practical application of signalling has been worked out before us, and with the examples from a scheme in the neighbourhood

of Aldershot with which a great many of us are familiar. This brings me to the first point I wish to remark about—that is to say, how convinced all signalling officers, non-commissioned officers, and men, as far as I can judge from my experience of signalling in India and Aldershot are, that our lecturer is absolutely on the right path in insisting on the tactical application of signalling. The importance of this has always been known to officers in charge of signalling on service or at manœuvres; but the lecturer, in his new manual, is bringing it home to all ranks, signalling officers, non-commissioned officers and men. I do not suppose that there is now any instructor or assistant-instructor who does not realise that the selection of stations and getting into communication is the important thing in signalling, that speed must give way to accuracy, and if I may try and put it in one sentence, to be able to read a map and select your stations is as important as to be able to read the flag or heliograph. Now, in connection with this, it will be realised that signalling will require an intelligent knowledge of the country, not only to be able to place stations, but to place them in the best and most economical way. Also the limitations of signalling must be observed—*where signalling is impracticable* (not possible for any reason), the general officer should at once and frankly be told so. All this demands that much latitude should be given to the signalling officer; and it is always given in my experience. This brings me to my second point, namely, that the brigade signalling officers, officers in charge of any large party of signallers over a large extent of country, should be senior officers. A senior officer is better able to lay his wishes before the general officer commanding; he has more experience, probably, of signalling, and is more ready to take responsibility. I need only say that I think brigades have suffered sometimes in the signalling line from the officer, however skilful, in charge of the signalling being too junior. Some steps might be taken to encourage officers not to drop signalling when they reach the rank of captain. Numbers of officers do so at once. Another point is the use of bicycles for infantry signallers, which the lecturer mentioned. It is not too much to say, in my humble opinion, that this would work an absolute revolution in signalling in countries where the bicycle can be used. Every day at Aldershot can be seen the great advantage of using the bicycle in connection with signalling. The signalling should not lag behind other branches. An invention like the bicycle, if properly used, would be the greatest boon to signalling which it has ever had. The whole subject of bicycling in connection with signalling is of course one which needs very careful consideration, and more experience than I can claim to possess; but I *do* think it is one which the authorities may well seriously consider. The French have used the bicycle for military purposes to convey so many fighting men from point to point, and it would be equally important to convey signallers, so that they would be able rapidly to take up a new line of posts. The three points which I have mentioned in a very disconnected way are: firstly, the great importance of the tactical application of signalling which is being taken up now; secondly, the advisability of encouraging senior officers to keep up their signalling; and thirdly, the great possibilities of cycling in connection with signalling. The last and most important point of all is, to say with how much interest and profit I think every regimental signalling officer and others must have listened to the lecture we have just heard.

Colonel F. C. KEYSER, C.B. (late Inspector of Army Signalling):—First, Sir, I wish to compliment the lecturer upon having given us a clear and distinct view of how far signalling has progressed, and what it has done in recent times. I think, from what he has said, we must all conclude that signalling has now taken its place in the Army and must remain; that it will be impossible in the future for us to do without signalling. I think that the way he has applied it to tactical operations is of very great importance. He is especially fitted for that, and I know he has a great reputation for tactics, and we have only to look at these maps which he has executed with his own hands to ascertain how easily it must come to him to be

able to formulate his various plans and to conduct tactical operations at his schoo at Aldershot in the able way in which he has hitherto done. I am very glad, first of all, to be able to see that he has followed the lines which his predecessors, perhaps somewhat weakly, laid down. I am perfectly in accord with every single word that he has said as far as actual signalling goes, but there are one or two little things that perhaps I do not agree with him in. For instance, with regard to the apparatus at present used, I agree that the flags, the semaphore, and the heliograph are the best ways of communication by day, but I think our present system of lamps is hideous. I tried all I could to alter it, but I must own it was a very difficult thing to do ; and, in fact, I could not do it. I could not get anyone to invent anything that would replace the present apparatus. Our hand lamps I have always said, and will continue to say, are absolutely useless. They will not burn ; they only burn oil, in the first place, which is very expensive, and can only be got in very civilised places indeed. If you wished to replenish your stock in any out-of-the-way place, it would be utterly impossible. Then they get very hot, and after an hour's work you cannot use them, and the distance that they signal is so short that they are almost useless. With regard to the lamps which are used in India, I quite agree with what the lecturer said when he called upon me to endorse his opinion that the lamps may be very good for India, but they are no use in England. The distance that they say they can use them in India does not apply to England, as far as I know. I have tried them in India myself very often, and I have never come up to the distance which signallers now say they can make them carry. They may do very well, but I never could manage it. Now there is a great objection to them, namely, that they have glass chimneys, and these glass chimneys break, and when they are broken the lamps become useless. I am glad to see that cycling has been introduced, and I quite agree with what the last speaker said—that it is a very great and useful innovation. I have always held that signallers should be carried, if possible. You must remember the work of a signaller begins after the marching is over. I have often seen signallers after a long and weary march, before they have been able to have a wash or have anything to eat, sent off at once to occupy a new post some miles away, and very often with a very stiff uphill climb. I think all signallers should be carried in some way or another. Cycles certainly, where there are roads or where it is suitable country, might be used. Of course, in a hill campaign like Chitral, or some of the other Indian campaigns, it would be utterly impossible to use cycles, but there the signallers might be mounted on mules or very small common bazaar ponies, which would not cost very much, and I am sure the extra work which you would get out of the signallers would more than repay the trouble and expense of mounting them. With regard to telegraph work, I am very glad to see that the lecturer has succeeded, in his school at Aldershot, in starting telegraphy. I am afraid he is knocking his head against a very hard brick wall in the matter of the Royal Engineers, who seem to think that the monopoly of telegraphy should be in their hands. But I think, as I have always said, that the signallers' work begins where the telegraphers' leaves off ; and if some easy, light method of electrical telegraphy can be managed by the signallers, so much the better. I can only tell you this, that in India, and also in Egypt—but in India especially—after I had trained signallers with a great deal of trouble on service, and had trained them at the front, this happened : We had very few signallers in those days, but we had got them to a high state of proficiency, and as soon as we had settled down and the engineers had opened up telegraph stations, they had no men to supply for signallers, and they used to take away all my best signalling men to turn them into telegraph operators, and I had to begin all over again teaching fresh men signalling. I do not call that at all fair, and I think that, if a great part of the *working* of the telegraph lines was left in the hands of the signallers, the engineers would have much more time to attend to their own work, which is more the laying

down of the lines and keeping them in order. I have nothing more to say, except to congratulate the lecturer upon his paper.

Major E. C. BROUGHTON (2nd Bn. York and Lancaster Regiment) :—I wish to make a remark, if I may, about the numbers of signallers now allowed by regulation. Since I had the honour of being instructed by Colonel Keyser, over eight years ago, I have been instructor in my regiment, and I have certainly come to the conclusion that an infantry regiment might do with a few more signallers. The lecturer has recommended that there should be a corps of signallers, in addition to those employed by the regiment or brigade. If such a thing could be arranged it would probably be most useful to all concerned. An infantry brigade, the lecturer has told us, has 4 sergeants and 32 rank and file signallers. The army corps has 25 sergeants and 200 rank and file; but it very seldom happens that we are with an army corps, and often not even with a brigade. I have lately been out in the Colonies, and may mention that we have had in Cape Town, till quite lately, an infantry garrison of one battalion and a half. In the Island of Mauritius, another Colony, the infantry garrison is but half a battalion. In both these places we have manœuvres year after year, carried on, I believe, on a scale far exceeding the numbers of troops at the disposal of the general officer commanding. The result is that the success of the manœuvres almost entirely depends upon the signallers. The signallers are wanted everywhere; they are wanted to keep up communication in the different fortresses by the sea, to keep up communications with the general officer, who, perhaps, remains in the town, and to keep up all sorts of communications among the outposts, carrying on reconnoitring work and other kinds of work for which they are specially intended. But it is almost impossible for one regiment in an isolated place to find sufficient signallers. I believe that signalling is very popular in the Army, and if more signallers could be allowed they could be quite easily found. It very seldom happens, I think, that when an officer-instructor starts a class of men he does not find that a great many men already know something about it. They practise it in the barrack room, and they are very fond of it; and I think if they could be encouraged to become signallers or supernumeraries to a larger extent than they are, many more would very gladly come to the call of the signalling officer. It often happens in a regiment that there are many signallers who give up their work because they get their promotion or go to something else, they cannot be kept on as regular signallers, and their education in this branch of their profession is entirely wasted; but I think that all signallers who pass through a proper course should be allowed, or be ordered rather, to practise regularly now and then. Although they would not be perfect signallers fit for communicating between brigades and divisions, yet they would be very useful in their regiment for signalling in a slow way and just between their own companies. For it scarcely ever happens now, I think, that a company can keep its own signallers—they are always required somewhere else. They are taken away by the brigade signaller; they are taken away by the general officer commanding; and the regiment itself, when it is isolated, is almost denuded of its signallers. Everything almost in these cases depends on the signallers—the proper movements and the whole comfort of those engaged in the manœuvres—and when the manœuvres are over, how are the troops, if they are much scattered, to be called in? Entirely by the signallers! If anything goes wrong, who gets the blame? The signallers! It is always the signallers. As Colonel Keyser has said, the signaller on active service has very hard work to do. Many men envy him. They see him flag-wagging on the barrack square, and they think that he is doing nothing. But when it comes to real manœuvres (as the colonel has said), when the march is over the signaller begins his work, and, perhaps, when others are having their dinner or settling down to be a little comfortable, the signaller is sent off to get up communication with some other distant station. I say it with all respect, but

rom my own experience, if the number of signallers could be increased, I feel sure it would be of great advantage to the Army.

Major ALEXANDER GLEN, 14th Middlesex (Inns of Court) R.V.:—As a Volunteer signalling officer I should like to add my thanks to those which have gone before to the lecturer for his able and interesting lecture. There are one or two points on which I should like to make an observation. I am not sure how the lecturer would have an ordinary signaller of an infantry battalion mounted. I quite agree, so far as I have been able to judge, that it is putting too much upon a signaller to keep him marching about on foot, and expect him to wait till his battalion has passed, signalling with his flags, and then to catch up the battalion after it has moved on a mile or two, and when the battalion gets in, to go out to the top of a hill or windmill, or somewhere, and spend his evening there. But I should like to know whether he thinks that the signallers ought to be mounted on cycles as part of their equipment, or on horse or pony back, or something of that sort? If they were mounted on cycles, undoubtedly they would have to go to a great many places which could scarcely be reached by a cycle, whether they are climbing up very steep hills, or going to the tops of houses or buildings, and so on. There are many places which they cannot reach with cycles, and they would have to leave their cycles a long way behind. To some extent that remark applies to horses also. I should imagine that a small pony of some sort would usually be the better mode of transport for the signallers than the cycle. On the other hand, the regiments have their cycle sections, and it has always appeared to me that the military cyclist ought to be a signaller. He is always having opportunities of utilising his signalling, and he is a very much more useful cyclist if he can signal than if he cannot. I suppose, however, that it would not do to merge the battalion signallers in the battalion cyclists, and that they ought to be separate organisations. Another thing I should like to refer to is the telegraph. Telegraphing by signallers was for a long time a great fad of mine. I have not had time to give it much attention lately, but some years ago I read a paper on the subject before the Aldershot Military Society.[1] I had made an apparatus then, and I have improved it very much since. I showed it to Colonel Kennedy one day last year. I have not been able to attend to it much lately, but the idea of the thing is, that when you get to the end of a line which is usually laid by the Royal Engineers, who have a somewhat heavy line, and who always have to go to earth at each end of it, which is a disadvantage, no doubt, the line might be taken up very easily by signallers with a very light equipment consisting chiefly of a twin cable, a double wire, which obviates the necessity of going to earth at all. The system that I made had this twin cable wire divided up into lengths of about a quarter of a mile. These were wound up into hanks which would go on a man's shoulders, and they do not weigh so much as a great coat. At each end of the wire there was an electrical connection by which you could unite one hank to another instantly, or unite one hank to the instruments or to the reel with which you wound and unwound it. These hanks could be put on and off a collapsible reel and run out as quickly as the men could run. Two men would carry the wheel between them; it is quite light, and it can go anywhere where the men can climb, practically. During the whole time, by means of connecting instruments at the end of the wire, the apparatus is in working order and the men can even send their messages as they are walking along. No doubt the thing that I made is in a somewhat embryonic condition, and various improvements could be made to it, but it seems to me that that is the line to work upon; and that if that were carried out and the apparatus were made sufficiently strong and care was taken that the various parts were made so as not to be liable to get out of order, it would be an extremely useful addition to the equipment of signallers. It does not weigh very much nor is it very bulky. You could have as many or as

[1] 9th October, 1889.

few hanks of wire as you like. The instruments go in a small case about the size of a heliograph case which could be carried on a man's belt. It weighs very little and it is always in working order and ready to be set up at a moment's notice. That I think forms a connecting link between the telegraph of the Royal Engineers and the flag signalling of the signallers; and for my part I should be rather glad to hear whether Colonel Kennedy does not think it might be useful to develop such an idea as that.

Mr. ERIC STUART BRUCE:—As Colonel Kennedy has mentioned the subject of signalling by balloon, I should like to say one word. I need not say very much, as I gave a very full account of my own system of electric balloon signalling at the old premises a few years ago. I then described the experiments I had conducted for this and various other Governments. The point I should like to refer to is that of weather—the disadvantage to the balloon of certain states of weather which Colonel Kennedy has pointed out. With regard to the system of electric balloon signalling, where no observer is taken up, but only the signalling apparatus of the balloon, and consequently a small balloon is used, the disadvantage of wind does not operate nearly as much as when a large balloon is used to take up observers in the car. I have very successfully carried out signals, with a liberal use of ropes, in what we may describe as half a gale of wind. I should like to ask Colonel Kennedy if he does not think that the advantage of altitude attained by a balloon in such places where it can be used, a very great one? As it was always urged somewhat against my system of electric balloon signalling that it was slow, I should like to take this opportunity of saying that at last, after searching for years, I have found an incandescent electric lamp in which the light goes in and out instantaneously. That will enable signals in the balloon to be very much more rapidly increased in speed. That is all I need say at present.

Lieut.-Colonel KENNEDY, in reply, said:—With regard to the few points which have been raised during the discussion, I may say that I quite agree with what Major Browne has stated as regards the senior officers and also the study of map reading. He has had great experience of signalling in the field, having conducted operations in the Waziristan expedition in 1894 and 1895; time prevented my referring to it, but it was most successful in every way. Colonel Keyser, my predecessor, has been most complimentary as usual. I concur in every word he has said about the hand lamps. But I saw Major Hippesley, who is on the R.E. Committee, to-day, and I believe I am right in saying that a new hand lamp is ready to be tested, and I am sure all signalling officers will be very glad to see the last of the present one. As regards cycles, two or three gentlemen have referred to them in connection with signalling. I can only answer from my experience at Aldershot, where we use them very largely for carrying out tactical signalling schemes on a somewhat extended scale, that we find them most useful, and make it a *sine quâ non* that all officers joining the School of Signalling must have a bicycle. What I may call barrack-square drill lasts about a fortnight or three weeks, or until the officers and non-commissioned officers have increased their power and accuracy in reading on all instruments, after which our main object is to give all ranks a thoroughly practical education in tactical signalling in the field, so that if they went on service to-morrow they would be ready to carry out their work in an efficient manner. Last year I had two officers, who did an independent signalling scheme covering nearly one hundred miles in the day, and at nine o'clock the next morning they handed in their report and a sketch of the ground covered, also the signalling stations selected. I know we never did such ambitious schemes at the Staff College when I was there. Colonel Keyser has also referred to telegraph work, and I think that is useful. I will first give you an illustration of what our non-commissioned officers can do. Yesterday I had the whole of them out, and we worked four telegraph stations. Three of the stations represented a support each, and the fourth another

at the general reserve. You may call A, B, and C the supports, and D the reserve, each support being linked to the reserve by wire; I also had five semaphore stations out as well, working in combination with the telegraph stations. The result was this: the three supports, during three hours' work, sent by wire 260 messages consisting of 4,928 words, with two mistakes only, and the semaphore stations sent 310 messages consisting of 5,165 words; the grand total being 570 messages consisting of 10,000 odd words; and I think I am right in saying that they were all very carefully checked, and I will guarantee you would not find a dozen serious mistakes out of the whole lot; and as these non-commissioned officers only joined the School on the 16th of last month, I think it will be generally admitted that the result was most satisfactory. I may also mention that the officers join the School knowing absolutely nothing about the "buzzer." Yesterday Major Rhodes told me that he had tested them and found that they could read and send at twelve words a minute off this instrument without a single mistake. Major Glen has referred to his signalling equipment, which he was kind enough to bring down to the School and show me some time ago, and I hope he will bring it down again and give us a chance of trying it. I quite agree with him about the cable he uses, and it appeared to me to be the very thing for us. It was a twin cable wire, requiring no earth connections, and very similar to that used by the telegraph battalion for outpost work. Major Glen, I think, asked me how the signallers were to be mounted. Well, of course, there is a great expense entailed in buying bicycles, and I only offered it as a suggestion, because I see it every day, that unless infantry signallers can be mounted you really cannot get the full value out of them, and bicycles are specially handy for our work. Mr. Bruce mentioned something about balloons. I regret I couldn't quite catch his remarks, but the reason I did not make any particular mention of them was that I know nothing about a balloon. I only went up in one once, and I never wish to go again. When I was on Sir Evelyn Wood's staff at Aldershot, we came to the conclusion during the manœuvres down at Swindon in Berkshire in 1893, that when the velocity of the wind was over twenty miles an hour it was impossible to signal from them or to make any reliable observations; but I may say that I am speaking now entirely from memory. I do not think there is anything else for me to reply to, except to thank you, Sir, personally most cordially for your kindness in coming here this afternoon, because I know how very busy you are, and therefore I consider it a very great honour you have paid me in attending.

The CHAIRMAN (General Sir Redvers Buller):—Gentlemen, we have had a most interesting lecture. I confess that when Colonel Kennedy asked me some time ago to take the chair at this lecture I rather hesitated: not because I was not myself very much interested in the future of signalling, but that I was a little afraid that he might say some things with which I should be obliged to differ; but I am bound to say, when I read his proposed lecture, that I felt at once I was quite at one with him. I do not know that he is aware how far he has gone in the direction I have been trying for some years now to push him. I cannot help thinking myself that the hesitation that there has been in the English Army in furthering signalling has been partly due to its name, which has connected it entirely with the idea of flag signalling; and my notion has always been that great speed with the flag is not necessary, and, indeed, the flag itself should only be taught as a means of educating the mind, the eye, and the hand for another sort of method for conveying messages across a distance of space. There has always been, and it has retarded signalling, considerable jealousy between signalling officers and officers connected with telegraphs. I think that point is very well put just now by my friend Colonel Keyser, but, I confess, when he complained of having to part with his signallers after making them efficient, I thought that he ought to have been of exactly the opposite opinion. Surely nothing in the world can be done by a man better to advance a campaign than by gradually training those men who will be wanted for more serious work than that upon which he could at

the moment employ them. A telegraph is absolutely essential; but signalling, which is a very good substitute for the telegraph, is not essential where the telegraph can be used. To my mind, the use of signalling, the reason we ought to keep it up, and the great advantage of it, lies in its being able to be a forerunner of a line of telegraph. That, I think, is very well shown in Colonel Kennedy's description of the Miranzai Expedition. There, as the telegraph came on, it superseded signalling, and the signalling went up into the districts which the telegraph could not occupy. That, I think, will always be the use of signalling in our Army. In England, unfortunately, owing to climatic conditions and to the features of the country, that sort of signalling is very difficult for us to practise; but under Colonel Kennedy, the School at Aldershot has made an immense advance in that direction. We are now in hopes of very shortly supplying that School with several lengths of light field telegraph, and I hope that the Signalling School at Aldershot will be able to become a school of supplemental telegraphy. That really I believe to be the future and the development of signalling. When one says that, one has to remember a good many things which have been mentioned by the different speakers. First, there is the demand for the conveyance of signallers. I am satisfied in my own mind that any general in command of a force, who really wanted to use his signallers as distributors of his messages, would take uncommonly good care to have them conveyed somehow to where he wanted them. I think it was only in the early days, before there was that agreement as to distribution of work between the telegraphers and signallers which is now approaching, that there could be a question of using signallers first to do one thing in one place, and then to do another in another. Again, if we are to use our signallers merely to convey information, the increasing number of signallers becomes a very serious question. The garrison of Mauritius was mentioned. I should like to see that garrison much stronger, but I would very much sooner put a few fighting men extra than more signallers; for after all we keep a garrison to fight, and the question of communication between the fighting men must be limited a good deal by the number of men you want to put there to fight. Therefore, I think that at the Cape, or at Mauritius, or any garrison that was mentioned, the question of the number of signallers must be settled by the number of troops you have there. I do not think it is ever possible that a certain place will require so many signallers, and another place will not require so many; it is better to have a proportion of signallers to the number of troops, and with regard to that proportion, signallers after all, while they are signalling, are not fighting men, or at least are not doing fighting work, though they are fighting men. I do not think it is advisable to increase the numbers unduly. When you have a campaign, the question of communication will have to be considered, and then would be the time to increase or decrease your number of signallers. The question of bicycles is merely the question of carriage. Personally, as signallers would usually have to go up high hills and other high places, I cannot quite see, if they had to leave the road, what they would do with their bicycles, and I think they would be a trouble to them; but that they should be carried if they have to work all day in sending messages, I think everybody will agree. The only thing Colonel Kennedy said which I hope he will think better of was in his last few words. He said he considered the telegraph work useful. I hope that the School at Aldershot will consider telegraph work to be the end of their course—not the useful thing, but the essential thing. We want men who, whether with the buzzer or with the ordinary telegraph instrument, whether it is with the heliograph or the lamp, can send the same message with any of them—those are the men we want to get. The advantage of the system of signalling in the Army is, I think, that it raises immensely the intelligence of the men who are taught it. There is no doubt that there is no officer, non-commissioned officer, or man who has learned signalling who is not the better for the education that signalling has given him.

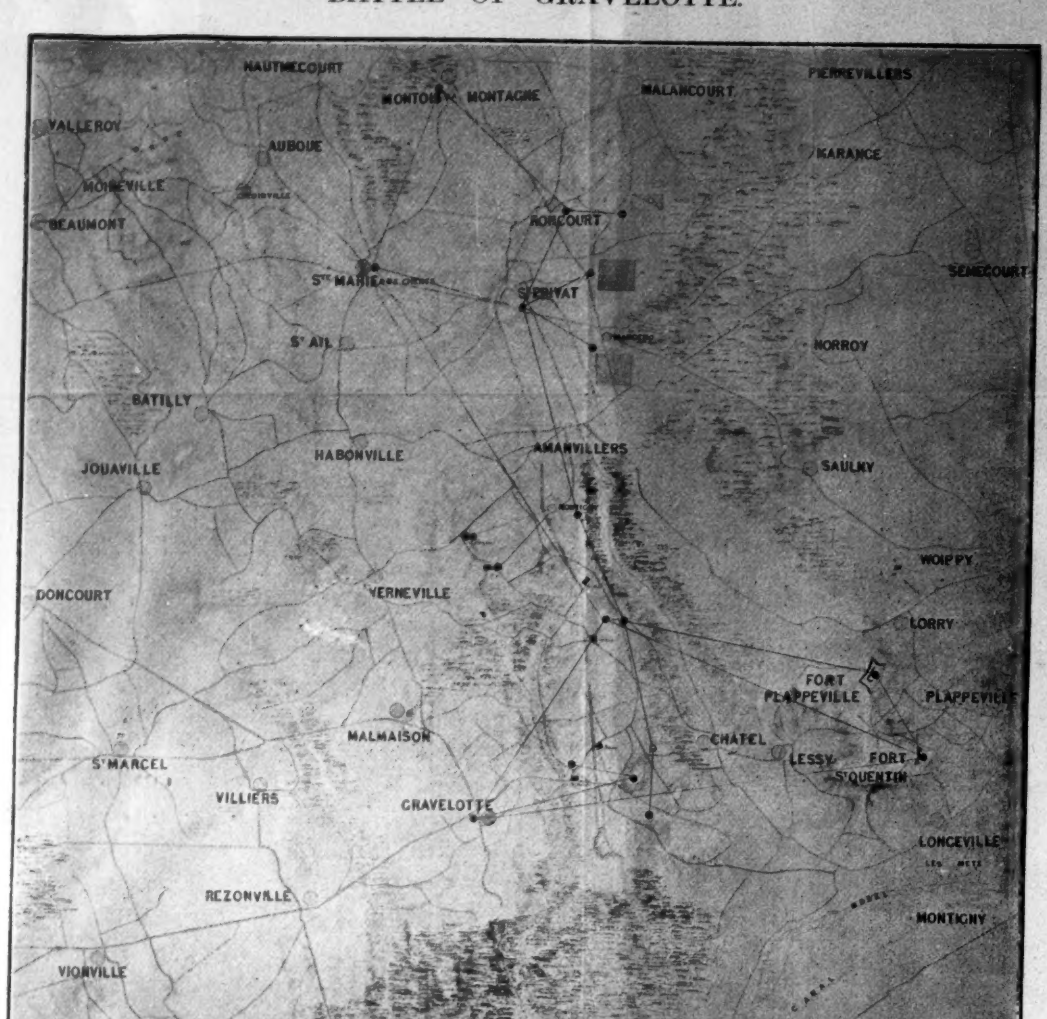
Colonel KEYSER :—It was only after repeated efforts. I had tried all I knew to get telegraph apparatus when I was at the School, and I was always told that it was none of my business, but the engineer's business.

The CHAIRMAN :—I know that.

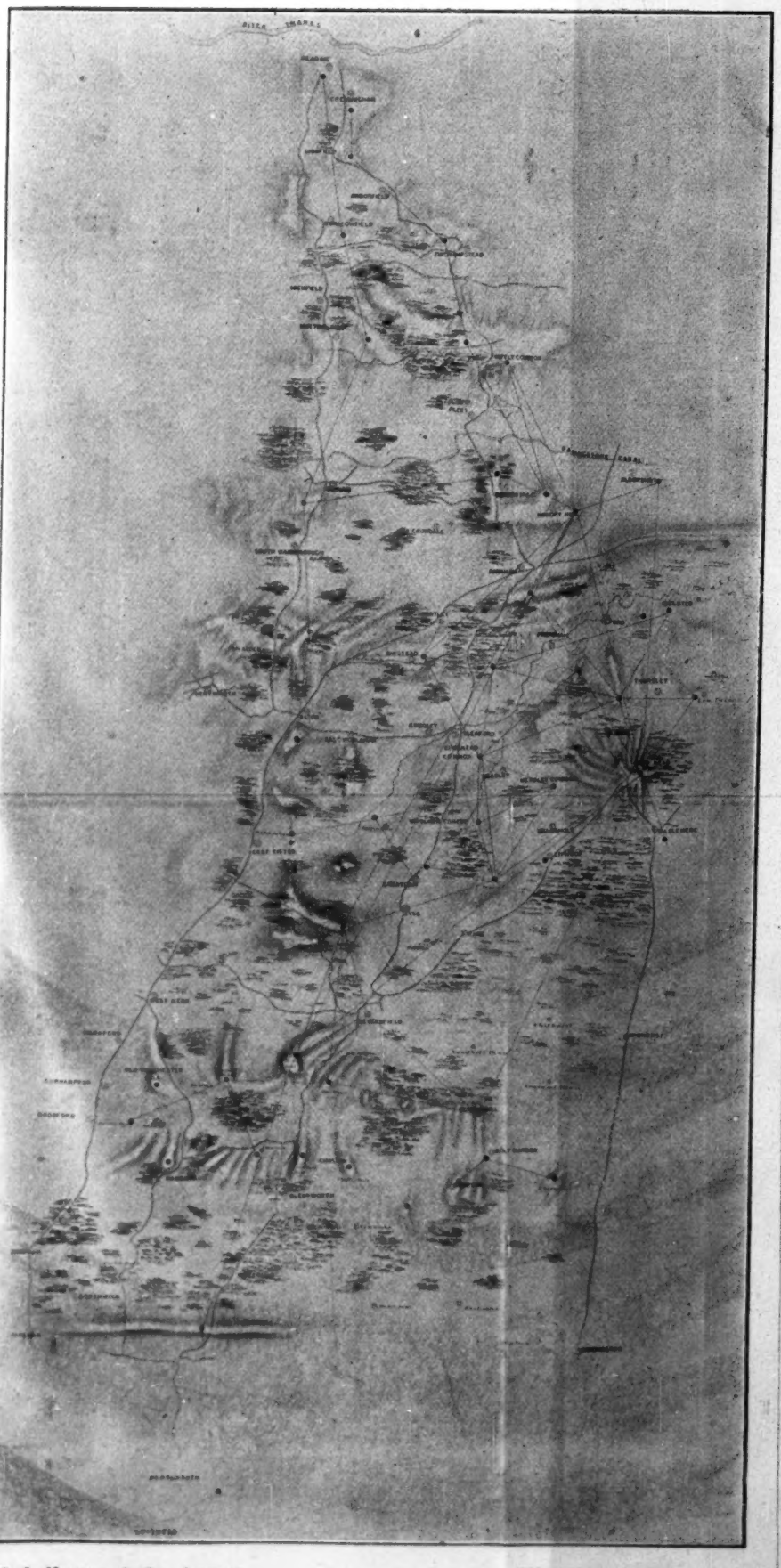
Colonel KEYSER :—You got in the thin end of the wedge, which I hope Colonel Kennedy will drive forward with the utmost vigour.

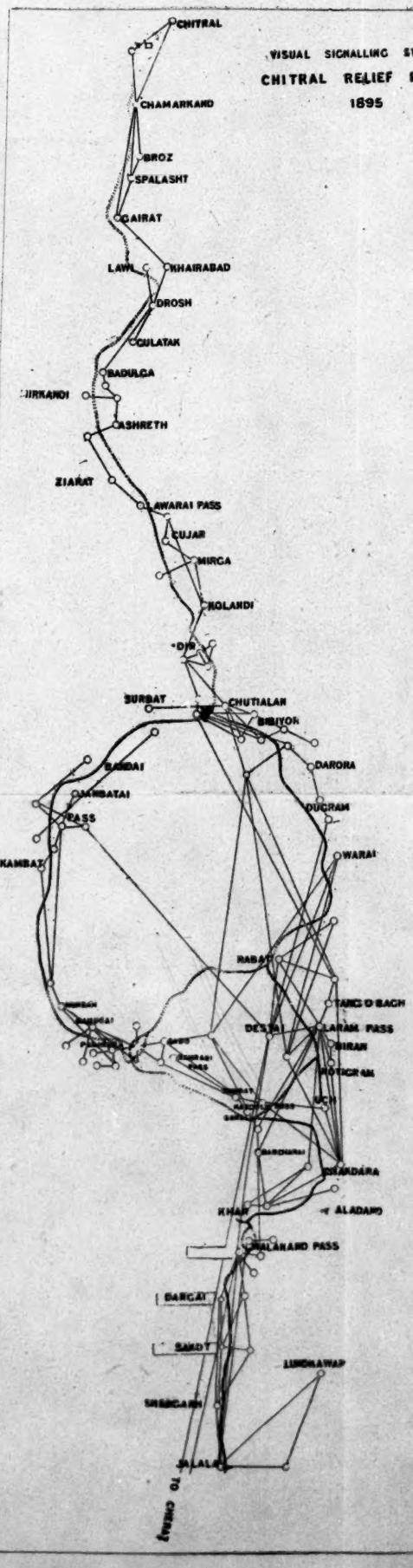
The CHAIRMAN :—I may mention with regard to that—I forget how many years ago it was, but it was at the old Institution—somebody was giving a lecture upon matters connected with signalling, and suggested that the infantry soldiers should be taught the use of telegraph instruments, and an officer connected with the telegraph department of the Royal Engineers got up and said they would be perfectly useless. I followed him at once, and I said that they might be perfectly useless, but that I had just come back a short time before from an expedition up the Nile, and for the first few months of the expedition the end of the line was at Dongola or Debbeh; those stations were formed, the instruments put in order, and the whole of the telegraph work at them was done by a private in the Berkshire Regiment. He was a signaller; we had no engineer up there. I instanced that as a proof that we should have in every regiment a certain number of men instructed n the telegraph. I believe that an immense advance towards that has been made under Colonel Kennedy's direction, as Colonel Keyser has said, on the lines laid down by his predecessors, and I can only say that I wish him more power at his elbow. This lecture proves what a thoroughly capable instructor he is, and I only hope that he will go on in the good work he is now doing. There is one thing I wanted to say which I had forgotten: one of the speakers remarked that the brigade signalling officer was too junior. I cannot say I agree with that. The work requires a good deal of activity, but otherwise it is not very difficult, and it is one of the best ways of bringing on a young fellow, letting him show what he s worth, and proving his general capabilities, which the very nature ot the work which he is called upon to perform is sure to demonstrate. A knowledge of the map, a knowledge of the ground, and a general knowledge of almost everything connected with it, is brought out in the signalling officer. In support of that I may tell you a story. When going up the Nile in 1884 we were trying to continue the railroad from Wady Halfa southward, and there was a great deal of difficulty in finding a way through one of the defiles in the valley of rocks, and the direction which had been selected by the engineers offered such very great engineering difficulties that we considered it would delay our estimate of the advance of the railway work by more than a month. Colonel Wynne, who was in charge of the signallers, and was laying a line of signallers in advance of the telegraph, came to me one day and said, "I have made a great discovery: in looking for a telegraph station I have found a better road for the railway." That is the way the railway now runs, and that was found by a signalling officer while doing his own duty. That shows how much a signalling officer may do merely because of his knowledge of the ground, and because he knows what is wanted. I think with these remarks I have only to ask you to allow me to return thanks to Colonel Kennedy for his most excellent lecture.

BATTLE OF GRAVELOTTE.



Scale (approximately) ·656 inch to a mile.

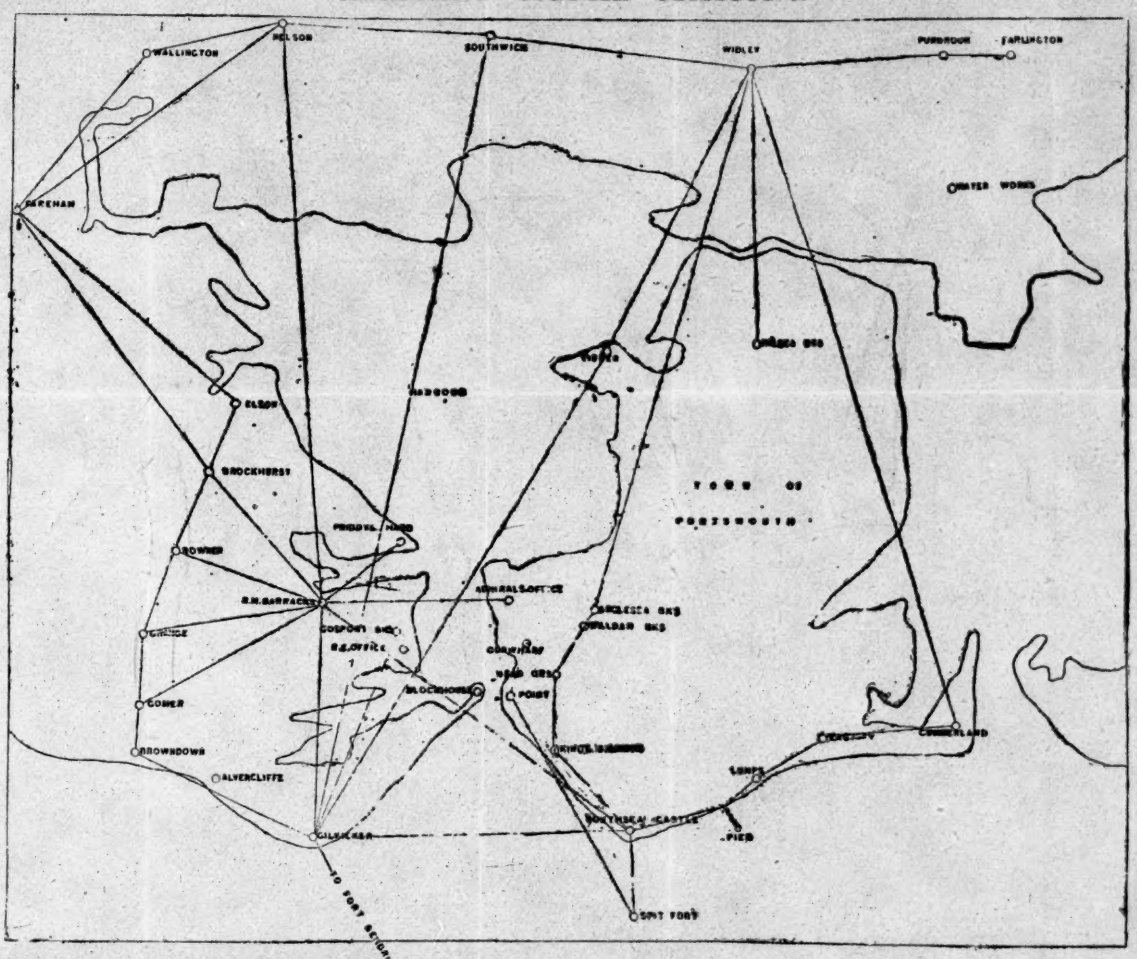




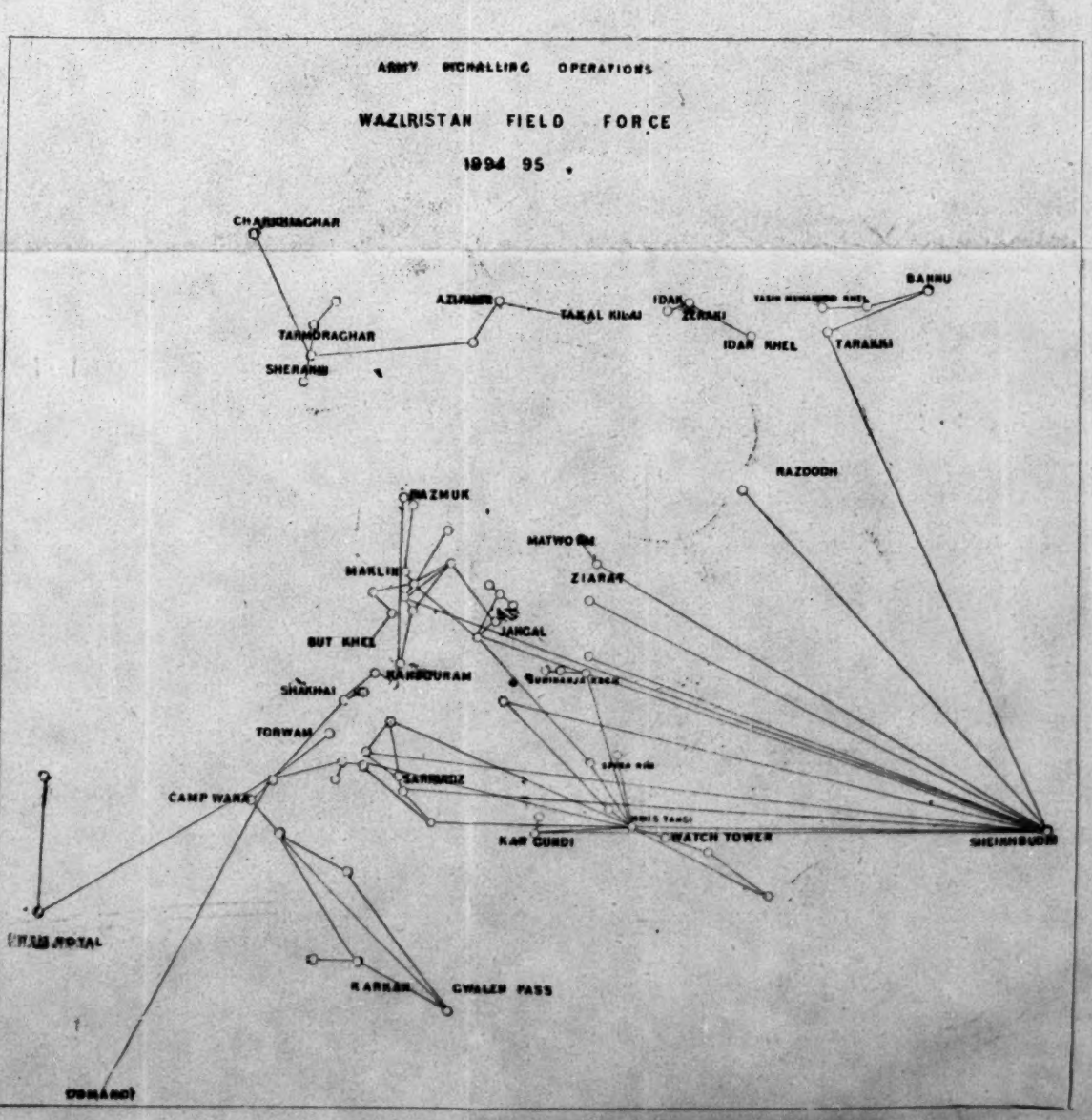
J. J. KELIHER & CO., LONDON.

Scale (approximately) $\frac{1}{4}$ inch to a mile.

MILITARY SIGNAL STATIONS.



Scale (approximately) $\frac{13}{16}$ inch to a mile.



A ROYAL MARINE RESERVE.

By Major A. F. GATLIFF, R.M.L.I., p.s.c.
(Instructor in Fortification, Royal Military College, Sandhurst).

On Tuesday, May 25th, 1897.

Captain The Right Hon. Lord CHARLES BERESFORD, C.B., A.D.C., R.N., in the Chair.

RATHER more than a year ago a letter appeared in the *Times* newspaper, over my signature, on the subject of a Royal Marine Reserve, and this lecture, which the Council of the Royal United Service Institution has done me the honour of requesting me to deliver, is the outcome of that letter. Since, however, the date of the lecture was fixed and the paper itself was in print, an authoritative announcement has been made which renders my remarks of little value. In the circumstances I suggested the withdrawal of the lecture, and I have only proceeded with it after submitting it to the authorities, and receiving their permission to deliver it.

Circumstances have moved rapidly within the past year, and there is every reason to hope that before long the Navy will have an additional Reserve to count upon; but there's many a slip 'twixt the cup and the lip, and until the matter was finally decided it was hardly safe to conclude that even the principle of a Marine Reserve had been sanctioned, let alone the details. Thanks to the awakening of the nation to the glory of the Navy and its needs and necessities in general, and due also in large measure to the enthusiasm of the Chairman of this meeting in the important matter of Reserves for that Navy in particular, public attention has been directed towards the perfecting of the great instrument for peace and war which Providence has given to the British Empire for the safety, honour, and welfare of our Sovereign and her dominions. The notion of a Royal Marine Reserve is by no means novel, but this after-

noon I shall hope to put it forward more in detail than has perhaps been done up to now. In 1886, in the very first issue of that admirable work "The Naval Annual," Lord Brassey (himself at that time Financial Secretary to the Admiralty) wrote as follows:—"We have hitherto neglected another valuable source for adding to the Naval Reserves. I refer to the Marines. A large number of men (800-1,000) pass out of the Marines annually who would be eligible to enter a Reserve. The greater number are settled in the vicinity of our principal naval ports. By proper organisation a Marine Reserve of 10,000 men would be available in a few years. This is a subject which might with great advantage be taken up by the present Board." That Board of Admiralty and other Boards have gone and come since then, but until the present one came into office nothing was done in the matter. The inaction may have been partly due to the generally received idea that the Marines themselves formed the Reserve of the Navy. It is a *rôle* that the Corps would be proud to play, but Marines are not able to be in two places at once any more than was Sir Boyle Roche's bird, and it is trying them rather too highly to expect that they can be part complement of Her Majesty's ships, and at the same time be available for Reserve duties. In former days, watch and station bills were framed with a view to ensure the efficient working of men-of-war without the Marines, should the exigencies of the Service require the detachment to be landed. Now-a-days, the men of the Corps take as much of the general duties of a ship as the seamen, and at least half the gun's crews are composed of gunners and privates. In short, the detachment is to all intents and purposes just as much an integral part of the ship's company as any other body of men on board; and it is hardly too much to say that when the detachment is landed, the whole interior economy of the vessel is dislocated, and the ship is practically inefficient. An outsider cannot, of course, have access to the papers of the Manning Committee, but from very careful calculations, it may be taken for granted that were the extra ships to be commissioned to-morrow that would put this Empire on a first-class naval war footing, there are only enough Marines to fill existing vacancies. What then becomes of the supposed Reserve? A Reserve, if it is anything at all, is a force supplementary to the peace establishment and one readily available in emergency. In no real sense can the present corps of Royal Marines, taking its everyday share in the working of Her Majesty's Navy, be called a Reserve; and that it should be so considered, is one of the anomalies that seem to be inseparable from the consideration of anything to do with that branch of the Service.

It is not perhaps difficult to trace how the idea arose, for, in former days, it was the policy of the Government to keep the Corps at a strength that would work out to some 25 per cent. of the total naval *personnel*. In 1805, when the British Navy was relatively stronger than it is now, 114,000 men were voted by Parliament for the Naval service, of whom nearly 35,000 were Marines, or about 31 per cent. After filling the ship detachments, there would still remain a certain proportion in barracks on shore. These figures might, perhaps, allow a percentage for supposed Reserve duties. During the present reign, as the Chancellor of the

Exchequer said in the Budget speech, the number of Bluejackets has been increased three-and-a-half times, while the Marines have been doubled. This year, Parliament has voted 100,050 men, about 17½ per cent. of the total being Royal Marines. Notwithstanding these variations the present tendency is rather to increase than to lessen the relative proportions of Marines in a ship's company. Successive Boards of Admiralty have increased the Corps every year by as many non-commissioned officers and men as could conveniently be raised at the required standard, and properly trained with the exisiting facilities; but even with these annual increments, the proportion of Marines is less by nearly 15 per cent. than in the spacious times of Trafalgar.

This theory of a Reserve being now available from existing Marines is a dangerous and disappointing delusion. The point would seem almost to be a truism, and hardly worth while elaborating; but, the contrary has been stated so often, that it has come to be accepted almost as a fact. One of the most recent writers on Naval Policy sums it up neatly thus:—"It is impossible to count on the Marines to fill up vacancies in the fleet, for the very sufficient reason that they are counted already, and are all included in our deficient total."

It is a moot question whether the present establishment is even sufficiently numerous to do all that is required of it. Few people, perhaps, are aware of the extraordinarily diverse duties that fall to the lot of the Corps. They have in the past fought on land all over the world, have taken part in every action in which British men-of-war have been engaged, have manned naval prizes, have reduced burning cities to order, have willingly helped to loot summer palaces, and unwillingly acted as plain clothes detectives in Dublin, have pacified Scotch crofters in the Hebrides, have ridden on camels towards Khartoum, and become mounted infantry at Suakin, and everywhere have done all kinds of things at short notice—and not without credit; in fact, as Rudyard Kipling has said of the Marines, "There isn't a job on the top of the earth that the beggar don't know nor do." They are literally expected to go everywhere, and do everything; and as far as their numbers allow they have so gone and done to the best of their ability.

The establishment for this year is 17,500, 1,000 having been added in the current Estimates, and presumably not yet all raised. At the depôt are some 1,500 recruits under preliminary training, their course being only completed in its most important naval item—viz., gun drill—on reaching headquarters. It may not be generally known, even in this lecture theatre, that all officers and men in the Royal Marine Light Infantry go through a very extended and thorough course of ship gun drill, and the men actually fire during their first course more rounds than a recruit in the Royal Artillery.

Besides these, there are some 250 musicians, and large deductions are also to be made for men permanently employed in the various barrack departments as shoemakers, tailors, and at other trades; for men in the last year of their service who are not generally embarked; for men stationed at Bermuda, Ascension, and Esquimalt; for men sick, and for

those incapacitated from the scourge that is decimating the Indian Army, and for men retained as a nucleus for training at headquarters. It will readily be seen that if we were suddenly involved in war, only about 14,000 would be available to fulfil all the regular afloat duties of the Corps. For a Service that has such wide ramifications, an establishment of 14,000 allows but a very slender margin to work on, and is altogether only a few thousand more than Lord Brassey advocated ten years ago as being a suitable strength for a Reserve. Nor is it as if the Marines had any Reserve of their own to fall back upon. Practically there is scarcely any Marine Reserve at all. True it is that there are certain pensioners from the Royal Marines, and true also it is that a general impression prevails that every pensioner is liable, *ipso facto*, to be called out for service. As far as officers and warrant officers are concerned, the impression may be a correct one, but it certainly does not apply to the great majority of the pensioners from the Corps.

These statements require some elucidation, and I will state the case as shortly as possible. The pensioners from the Royal Marines consist of men who have served for twenty-one years, and may be divided into two classes, viz., those under fifty-five years called Marine Pensioners, and those over fifty-five years called Greenwich Hospital Pensioners. These latter, by the Queen's Regulations and Admiralty Instructions, are not liable at all to be called out for permanent service. No provision is made respecting them in any Act of Parliament affecting the Navy. Formerly they might be enrolled in the Second-class Army Reserve under the Reserve Forces Act of 1882 (45 and 46 Victoria), which laid down that they could not be called out until all the First-class Army Reserve had been exhausted, and then only for service in the Army within the United Kingdom. Practically, therefore, they have never been available for Marine work, nor are they now. With regard to the Marine Pensioners proper, there are some peculiar facts to be noticed, which may not be generally known. These men, until lately, were on a different footing from ordinary naval or military pensioners. An Act of Parliament passed in 1853 enacted that "Whenever any emergency shall arise which, in the "opinion of the Lord High Admiral, or of the Commissioners for "executing that office, renders it advisable to require the services in Her "Majesty's Navy of any of the persons who may have served as petty "officers or seamen in the Navy, and may be in the receipt of pensions in "respect of such service; it shall be lawful for the Lord High Admiral or "Commissioners to order any of such persons to join Her Majesty's Navy, "and those so ordered shall join such of Her Majesty's ships and vessels "of war as the said Lord High Admiral or Commissioners may direct, and "shall form the crews or part of the crews of such ships; and while so "serving shall be entitled to the same pay and allowances according to "their respective ratings as men entered for general service, and shall "also continue to receive their pensions. Persons not attending when "called into actual service may be apprehended and punished as deserters "from the Navy."

Provisions of a similar character affecting Marine pensioners were

not made till 1884, when the "Act to amend the Naval Enlistment Act of 1853" was passed, and took effect from 7th August of that year. The words "non-commissioned officers and men" are substituted for "petty officers and seamen" in the 1853 Act, and the liability of pensioners was expressly limited to "persons enlisted or re-engaged *after the passing of this Act* who have served as non-commissioned officers and men of the Royal Marine Forces, and who shall be in receipt of pensions in respect of such service." It would appear, therefore, that no provision whatever has been made for sending Marine pensioners to the headquarters of the Corps, where they would necessarily come under the Army Act. On the other hand, with the existing Marine organisation considerable confusion would result from forwarding the men directly to "ships and vessels of war" as authorised by the Act, and the Navy would receive men without uniform and without the training that naval officers have a right to expect from Marines coming from barracks. It is clear, also, that only non-commissioned officers and men discharged to pension since August, 1893, are liable for permanent service. A man enlisted after the passing of the 1884 Act could not get a pension till 1905; and a man re-engaging after 1884 must necessarily remain at least nine more years in the ranks for pension, as he can only re-engage when within a short time of completing twelve years' service.

The Marine pensioners throughout the country number some 4,000 men, and of these only 853 come within the scope of the Act. In all probability even this number is far too large, but to be on the safe side it includes every man discharged to pension since August, 1893. The proportion of non-commissioned officers is very large, no fewer than 219 being of or above the rank of sergeant, while 26 are musicians, leaving about 600 gunners, privates, and corporals to fill up all vacancies, and to act as a Reserve to a corps that is certain to have a lot of wastage. The remaining 3,000 odd may, and a proportion probably will, volunteer for active service; but should they not come forward, it is questionable whether they could be proceeded against as deserters from the Navy. A man of this class may forfeit his pension for misconduct, but it is by no means clear that he can be forced to serve. He may perhaps volunteer, but that is, at best, an unsatisfactory state of affairs, for when the supply of Reservists depends upon volunteering, no precise calculations can be made of the available resources. Moreover, many of these 600 rank and file must be nearly 50 years of age, and are no longer at a time of life that suits the conditions of a modern man-of-war, where everyone should be at the highest condition of vigour and efficiency. The large proportion of sergeants, colour-sergeants, and staff-sergeants would also constitute an *embarras de richesses*, for, although there is plenty of room in a ship detachment for privates, there is necessarily a limit to the numbers of the higher ranks that can be usefully employed. There would also be the difficulty arising from the grievance of the serving sergeants in having "rusty" pensioners put over their heads, for in the Navy there is so much of change and novelty of material that men soon get out of date and below the requisite standard of knowledge. Finally, pensioners are a very

expensive Reserve, both financially and as regards the services they are able to render; for they continue to receive their pensions in addition to ordinary pay, and they are, I submit, unsuitable for the needs of a corps like the Royal Marines.

It may be that the question of an internal Reserve of men who have served in the Navy and Marines has been in the past deliberately kept in the back-ground; for there was formerly, undoubtedly an influential school of thought which was of opinion that the provision of an adequate Reserve in time of peace might be a bar to the willingness of the country to pay for a permanent increase in the *personnel* of the Navy in time of war. Surely that is an utterly false theory, and seems to be founded on the proverb that "you cannot eat your cake and have it." As regards the Navy, that roverb is only a half-truth, or no truth at all. Persons who adopted that view were looking through the wrong end of the telescope, and belittling the capacity and desire of the nation to gladly grant any sum that may be requisite for the necessities and legitimate needs of the Navy. Even the splendid Estimates that have happily been the fashion for some years—a fashion that it is to be hoped has come to stay—have not been demurred to, and the larger they are the greater enthusiasm they call forth. A talented and brilliant writer in the current *Edinburgh Review* has sketched from a soldier's point of view the possibility of a foreign invasion of England, and points out that although the operation would be one of great risk to any Continental Power, yet the prize—London—is of such mighty magnitude that it would be worth while to run almost any risks when the result would be so far reaching. Go into the city, and ask any merchant or banker you like, what would be the financial loss brought about by a threat of foreign invasion that had any semblance of likelihood, and he would shudder at the very thought, and decline to discuss it at all. He would simply say, "It must not be"; and if asked how it is to be insured against, would reply, "Oh, of course, by having the Navy large enough." The ordinary lay mind cares nothing whatever about the "fleet in being"—that apparently being a fleet which, although perhaps temporarily shut up in a harbour, is supposed to exercise such a marvellously deterrent effect on a foreign invader. In this connection, it may be noted that the "fleet in being" idea is pretty well knocked to pieces by Nelson himself. A powerful Navy, a superior Navy, a Navy that will keep our hearths and homes safe, is what the country expects for its £22,000,000 a year.

Cobden, a peace-at-any-price man, would willingly have paid the price of £100,000,000 for the Navy, which is a protecting, and not an aggressive, force. Now, a fleet may be more powerful and more numerous as regards its ships; but what is the use of it all, if at the very outset of war a country is unable to man all its ships from want of men?

At the present time the Navy of England relies upon three emergency sources, but the following points should be noted:—

1. For some years to come yet, the newly-organised Reserve of seamen who have actually served in the Navy, will not be an appreciable quantity.

2. Of the existing Reserve of merchant seamen, it is an open question how far they can be really counted on for war, as the food supply of this country must be maintained, and cannot be allowed to be chiefly in the hands of foreigners.

   History shows that an accession of carrying trade is one of the prizes of the victor in naval warfare ; and with all our merchantmen fully occupied, the number of R.N.R. men who could be spared from their ordinary vocations would be very limited.

3. The Naval Pensioner Reserve is subject to the same disadvantages as Marine pensioners, in having a large proportion of superior ratings and in not having up-to-date knowledge.

With these considerations to be borne in mind, have we, or have we not, sufficient men to replace the heavy casualties that even a crushing defeat of the enemy costs the victors ? Are we in a position to man the numerous prizes which will fall to our lot as in the old days ?

Within a few years after the crowning victory of Trafalgar it was necessary to raise the naval forces from 114,000 to 147,000 to maintain Britain's position as mistress of the seas. Such a large increase would hardly be possible now at short notice. The press-gang was then in operation, and, although the law authorising it has never been repealed, it would, of course, be impossible of application in these days. The proportion of native-born merchant seamen was also far greater then than at the present time, and consequently a lesser percentage of Britishers is now available. Yet very large numbers of men will be requisite in war ; for the eternal principles of Nelson will prevail in the future as they did long ago. As Captain Mahan says :—" The absolute annihilation of the enemy will be sought for, and only numbers can annihilate." Numbers of ships require numbers of men. Men are requisite that the first principle of all strategy—superiority at the decisive point—may be achieved, and in Britain's case there must be no mistake about it. It would be a great hardship for the admiral in whose hands the destinies of the country might be placed, if his ideas were to be hampered from want of ships, or, by what is almost as bad, receiving his ships one at a time as the Naval Reserves were organised. That good ships were in the past unable to put to sea for want of crews, was a naval sin of the most unpardonable variety.

I have been at pains to show :—First, that the Marines can no longer be counted as a Reserve to the Navy ; secondly, that the Marines have themselves no real Reserve ; thirdly, that the Navy may run short of men at a critical time from various causes, and, in any case, has no adequate Reserve of men who have actually served in its ranks ; fourthly, that it is an erroneous idea that would defer the formation of an internal Reserve at present for some future crisis, when it would probably be too late ; and, fifthly, that large numbers of men will be wanted at the very beginning of a war, and may even require to be largely increased.

I am not of those who think that a great naval war will be only a matter of weeks. The desirability, and even urgent necessity, of forming another Reserve is therefore apparent. A beginning has been made this year with the seamen, and it is to be hoped it will shortly be the turn of the Marines.

A Seaman Reserve is subject to greater deductions than a Soldier or Marine Reserve on account of men not being able to respond to the call; not from any lesser loyalty, but from difficulties of distance. A blue-jacket or stoker has a profession when he leaves after twelve years' service, and doubtless, in many cases, will exercise that profession in civil life, and so might well be abroad in a liner or merchantman, and unable to rejoin the Service. A Marine Reserve would be located in these islands and be available at once, for neither their ability nor their predilection leads them into the merchant service.

Before putting forward any proposals for forming a Reserve, it should be said at the commencement that with the Marines long service is a *sine quâ non*, and to permanently shorten it would be a fatal mistake. The ordinary enlistment is for 12 years, and men of good character, after 11½ years' service, have the option of re-engaging to complete 21 years for pension.

A Marine re-engaging is entitled to a gratuity of £1, and, if in the United Kingdom, is granted two months' furlough. At the present time, about 70 per cent. of the men who reach the qualifying period of service do so re-engage. The percentage was formerly higher, and is steadily decreasing year by year. There are several causes at work to reduce it, and amongst the most prominent are:—Firstly, that the men have very much more sea-service than formerly, and it is said that Marines actually serve a greater proportion of their time afloat than do the Blue-jackets; secondly, that the men esteem it a hardship that no increase of pay is made to them on re-engaging, when their seaman comrades in the Navy receive 2d. a day extra. In the current quarterly Navy List inquirers on the subject of re-engaged pay to Marines are referred to an Appendix VI., which does not exist, and, as a matter of fact, the extra pay given on re-engaging has been abolished for years.

A man who does not re-engage gets a discharge allowance of £1, and then his contract with the State is ended. Such men are at the very prime of life, and it seems a pity to lose them. I suggest, therefore, that they should be called upon to join a Marine Reserve.

With a view of arriving at the best means of forming a Reserve, it will be desirable to briefly consider the systems in operation in the two great Services.

1. In the Navy the plan just adopted for obtaining a Reserve of men who have actually served is as follows:—"Men who have been dis-"charged from R.N. after completion of 10 or 12 years' service with "good character and rating not lower than A.B., will be entered in "Class I. of the Naval Reserve of qualified seamen. These men will "be able to earn a pension of £12 a year, payable on reaching the "age of 60, by length of service in the Reserve without any further

"training in the Royal Navy. In the event of men of this class "volunteering for Naval training, they will receive pay as on existing "scale, and will in addition be granted a naval training gratuity of "10s. a month, which will be paid on completion of the training." Ten or twelve years in the R.N. will make a man 28 or 30 years of age, and he will have to wait 30 years at least before getting his pension. The exercise of his profession of sailor is in no wise restricted, since he is not required for further training. This system in its entirety is not applicable to the Marines, who leave after 12 years, as the men have no profession, and therefore cannot, as a rule, afford to wait without pay till they are 60 for the pension. But it may suit some to join a Reserve on these terms, and a Marine should be given the same chance as his Bluejacket comrade, alongside whom he is serving at date of discharge. The point as to Reserve service commencing at 10 years may also be noted with advantage.

2. The Army Reserve consists of two classes — the First-class Army Reserve and the Second-class Army Reserve. Class II. consists of certain out-pensioners of Chelsea Hospital, and formerly also included out-pensioners of Greenwich Hospital. It is only available after all Class I. have been disposed of, and then only for Service in the United Kingdom.

Class I. has four sections, of which the first is no longer of any practical importance.

Section B consists of soldiers transferred to the Reserve at the expiration of their colour service (usually seven years), and then completing the remainder of their "limited engagement" (usually five years) in the Reserve.

Section C consists of men who convert Army service into Reserve service, or who enter the Reserve at once for the residue of the term of their original enlistment.

Section D, supplemental Reserve, consists of men who, on completion of their first period of engagement (either wholly with the colours or partly with the colours, and partly with the Reserve), are enlisted for a further period. Men who enter the Reserve, if they enter under the terms of their original enlistment, are transferred; and, if otherwise, they are either enlisted or re-engaged. They are liable to be called out annually for twelve days, or twenty drills; but, practically, this liability does not affect them, and an Army Order is annually issued to dispense with the training. When the Lee-Metford rifle was taken into use, Reservemen were called upon to learn it; but everything was made as easy for them as possible, and in most districts they were, within limits, allowed to choose their own hours and place of instruction.

Men of the First-class Army Reserve receive:—

In Sections B & C { Ordinary pay, 4d. a day, issued quarterly in arrear. Deferred pay, 2d. a day, issued at the end of each financial year in addition to the ordinary pay.

In Section D, 4d. a day, and no deferred pay.

They are paid by station paymasters in each district, to whom they must report themselves, either personally or in writing, every quarter before receipt of the quarter's pay. The men are supplied with "life certificates," which they must complete and send in. The Army principle of forming the Reserve is a useful guide. In the Marines, it is the long service which is the great attraction; and even if the period of enlistment were raised to 21 years, of which 12 were to be with the colours and the remainder with the colours or in the Reserve, at the man's option, there is reason to think that recruiting would not be adversely affected. But the only object of extending the original period would be to do away with the necessity of re-engaging, and it is really an unnecessary experiment. Under the present conditions, about 200 Marines are annually discharged on limited engagement, and of these a certain proportion return to the ranks after a short experience of civil life and its financial difficulties. When men have given twelve of the best years of their life to the State, they think twice before permanently leaving a Corps which, although not without its disadvantages and drawbacks, has given them a home, to go into the world free men, but with nothing in their pockets. With such a small annual discharge of men after twelve years' service, it would take a long time to form a Reserve of any dimensions. But if the way were made a little easier, there is no doubt that the number leaving would be considerably augmented. If the effect of the proposed changes were to induce a larger proportion of men to join the Reserve, the Corps would certainly lose some excellent material; but the Reserve would be the gainer, and such a course is desirable until the Reserve has been built up a certain strength.

Following the analogy of both Navy and Army, I suggest that two classes of Marine Reserve should be instituted. The second class should comprise all Marine pensioners up to 55 years of age, and should only be available for permanent service after all the First-class Marine Reserve had been called up.

The second-class should be exempt from all drills.

The First-class Marine Reserve should comprise all men of sound body who had been discharged from the Corps with less than 21 years' service. Three sections, A, B, and C, might be formed, but the liability of all should be the same, viz., to be called out annually for 12 days or 20 drills. In practice this liability would be only nominal; for the drills should be dispensed with at the beginning of each year, except in case of a general re-armament.

Section A should consist of men discharged at 12 years, who had elected to join the Reserve for 9 years at a retaining fee.

Section B should consist of men allowed to join after 10 years' service with the colours, who would remain 11 years in the Reserve at a retaining fee.

Section C should consist of men allowed to go to the Reserve after 17 years in the ranks. These men would receive Reserve pay for 4 years, and then be awarded the same pension as if they had served 21 years in the Corps.

A supplemental Reserve D might be formed of men who elected, after 12 years, to join the Reserve without pay, but to gain a pension of £12 a year at 60 years of age. If men in Class D volunteered for training at headquarters, they should receive pay as on existing scale, and be granted a training gratuity.

As regards the pay of a Marine Reservist, it would seem only fair, considering the longer service and the generally superior qualities of the men, that the retaining fee should be somewhat higher than that given to those who enter the Army Reserve. Moreover, a private, after 7 years in the Army, gets £21 in deferred pay when he joins the Reserve, and it is not proposed that a Marine shall receive anything more than the discharge allowance at present granted. I suggest, therefore, that the Reserve pay should be at the rate of sixpence a day, paid quarterly in arrear; and that in addition, sections A and B should receive Reserve deferred pay at the rate of twopence a day, paid at the end of the financial year.

Section C, who, under this scheme, would receive a pension after serving four years in the Reserve, should not be entitled to the deferred pay.

Sections B and C would only be of a temporary character, until the Reserve had reached the numbers fixed by the Admiralty. Payments should be made by the nearest district recruiting officer either to the Reserve man personally, or through the post-office; and "life certificates" should be sent in quarterly, notifying any change of address.

Men in Sections A and B who had served continuously for twelve years with good character should be considered eligible, as at present, for the benefits of Greenwich Hospital if infirm or helpless.

A Marine, therefore, on reaching his period of limited engagement would have several courses open to him, and every man would, in one way or another, be utilised for State service, and in the way most acceptable to the man himself.

A real Reserve of trained men would thus be obtained, and it would be composed of men in the prime of life—from 30 to 40 years of age—who had learnt discipline.

With a Reserve taking men from the ranks who would otherwise remain twenty-one years, the pension list would be reduced; but additional numbers of recruits would be annually required to keep up the Corps to its existing establishment. Anything that affects the supply of men must necessarily be of great importance in a question of this kind. In 1895 1,550 recruits were raised, and in 1896 some 2,240, of a lesser standard, were approved, in anticipation probably of an increase. About 1,700 or 1,800 men are annually required to supply the wastage of the Corps. Formerly the Marines was the most popular of all Services amongst the recruiting classes, but that can hardly be said to be the case at the present time. If certain adjustments were made it would be easy enough to get practically any number of recruits of excellent physique that the Admiralty desired. The matter that militates most against the supply of men is the ration stoppage. The Marine is the only man in

Her Majesty's Service—sailor or soldier—who pays for the food issued by the State; and it is very difficult to convince the one whom Rudyard Kipling calls "soldier and sailor too," that it is an advantage to him to pay 4½d. a day.

About 60 per cent. of the recruits are raised in the London District, and non-commissioned officers engaged in the work have informed me that the ration question is beginning to tell in all town districts where there are competing recruiting-sergeants of different branches of the Service. Many a man whose predilection was for the Marines had been put off enlisting in the Corps by the remark, "Why do you want to join them; you don't even get your meat free, same as in the Army or Navy." A Marine on board ship gets his food for nothing the same as a Bluejacket. When attached to any regiment in the Army, the Marine is the only man in the whole barracks who has to pay for his bread and meat, unless special arrangements are made for him.

Nor can it be said that a private in the Marines is paid any better than a private in the Line. A Linesman gets one shilling actual pay and twopence a day deferred pay, and his rations are a free issue. A Marine infantryman gets one shilling and twopence a day actual pay and one penny a day beer-money when actually doing duty on shore. This latter is not payable when a man is on furlough or embarked. It will be seen, therefore, that a Line infantry soldier gets practically one shilling and twopence a day clear, and a Marine gets only tenpence halfpenny. He thus compares disadvantageously with his corresponding grade on shore. These points are mentioned merely to show that irrefutable facts against the Marine Service can be and are quoted by recruiters; and such anomalies, unless removed, must before long influence adversely the supply of men for the Corps. It is understood that the formation of a Marine Reserve would not *per se* prejudicially affect recruiting, but would tend rather to stimulate it.

Any system of providing a real working Reserve must necessarily take time, and be a gradual process. Meanwhile, with the coming close of a century, and the historic liability of that period to great wars, it is well to be prepared, and to adopt some additional measures that admit of speedy realisation.

There are two sources of quickly and effectively adding to a Marine Reserve, viz., by Militia and by Volunteers. It cannot be said that as regards the Naval Service generally either of these ideas is novel. In 1853 an Act of Parliament was passed to establish a body of "Naval Coast Volunteers, not to exceed 10,000 men." In 1859 another Act provided—on paper—for a so-called Reserve of Seamen, 30,000 strong to be styled "The Royal Naval Volunteers."

A third force, "The Royal Naval Artillery Volunteers," was formed in 1873. Of these various bodies none now remains, and the last was disbanded by the Admiralty in 1892, consequent on the report of a Committee presided over by the late Admiral Sir George Tryon, from which are taken the following extracts:—

"The Corps of Royal Naval Artillery Volunteers is composed of

men who have not, as a rule, practical acquaintance with the sea, but are attracted by sympathy and aspiration.

"The Committee suggest that there are grounds for maintaining that a volunteer force affiliated to the Royal Marine Artillery would prove not only a popular force, but, from the system of training and discipline that could be established, it would be a far more permanently valuable force than any so-termed naval force in which are enrolled men not inured to sea life, and who have no sufficient practical experience at sea, which experience cannot be given by Government under any volunteer system we can devise. A volunteer force organised on the lines of the Royal Marine Artillery would be liable to render such service as is referred to—*i.e., duties on shore or afloat which do not require the special training of a sailor*—and in addition, the difficulty of supplying efficient and suitable officers for the command would be satisfactorily met."

From Royal Naval Artillery Volunteers to Royal Marine Artillery Volunteers seems a natural and easy transition; but in the debate in the House of Commons on the disbanding of the force, no notice appears to have been taken of the very strong recommendation of Sir George Tryon's Committee. While the various bodies of Naval Volunteers have been successive failures, the Infantry and Artillery Volunteer forces of the Army are in a flourishing and vigorous condition, and constitute a great safeguard for England. It cannot be that persons who join an Admiralty volunteer force are less patriotic than those in a corps under the War Office; so the reason for the dismal failure of naval volunteers must be found elsewhere. It lies in the fact that their organisation and training were based on a wrong principle, which was predestined to failure. You cannot train volunteers on land to become sailors, and it is a farce to attempt it. But I submit to you that you can train Marine Volunteers on shore, and it is done every day with the Marine Regulars. True it is that when a Marine recruit goes on board ship he is not half the man he afterwards becomes; but association with comrades who have been sailors from their youth up soon makes him tumble to sea life.

It is suggested, therefore, that at each Marine headquarters a Volunteer battalion should be raised, or an existing battalion converted into Marines. If it were found that Eastney and Southsea could not support an additional Volunteer battalion, the 2nd Hants Volunteer Artillery might be affiliated to the Royal Marine Artillery. At Portsea, Gosport, and Forton a Marine Infantry Volunteer battalion should easily be raised with its headquarters at Forton. Neither at Chatham, New Brompton, Rochester, nor Strood, is there any Volunteer organisation; and it should not be difficult to raise a battalion to be incorporated with the First Division of Royal Marines, permanently located at the dockyard town. The three populous towns of Plymouth, Devonport, and Stonehouse might well between them supply enough men to form one of the proposed new battalions in the west. In default of this, either the present 2nd V.B. of the Devon Regiment, of which the adjutant is nearly always a Marine officer, or the 2nd Devonshire Volunteer Artillery, might form a Reserve for the Royal Marines at Stonehouse.

There is reason to believe that any movement in this direction would be generally popular, and, with large dockyard populations, little difficulty should arise in filling the ranks. Being constantly quartered together, a strong and close feeling would soon spring up between the parent force and its affiliated battalion. The latter could have full use of the gun-batteries, gun-boats, and rifle-ranges of the Marines, with scarcely any additional expense, and would be continually under the eyes of a Corps whose sterling naval and military qualities the new battalion was striving to emulate and acquire.

In times of war and trouble when men are called upon for active service, it can seldom happen that all members of a Volunteer battalion could leave their various employments, no matter how great their patriotism; but, in a Marine Volunteer Corps, men able and willing to be actively employed, even in small numbers, could be utilised for service in all sorts of ways under the Marine organisation; and even those who were unable to leave their employments could occupy the various Marine barracks, and free all the Regulars for active service ashore or afloat. The idea of a Volunteer service, on the whole, is to await the enemy and make it as unpleasant as possible for him when he arrives on these shores; but there are, doubtless, a good many of the more enterprising and adventurous sort who would like to go and smash the enemy while he is yet afar off. These are the people who are wanted in a Corps of Marine Volunteers. There is little doubt about their being given a chance in war, if in peace-time they had been made efficient gunners for service afloat. Many excellent non-commissioned officers, with long experience of instructional work, leave the Marines to train Volunteer corps for land service. Such men would be far more usefully and suitably employed in imparting a knowledge of Marine work ashore and afloat. The sergeants who now form such a large but embarrassing portion of the Pensioner Reserve would find a suitable and natural outlet by joining the permanent staffs of Marine Volunteer battalions. If the Admiralty were empowered to issue warrants to raise such battalions, there are lots of people of status and position who would willingly accept commissions.

Frequent complaints have been made that there are no representatives in the capital of the naval forces of the realm, and that there is no body of men in London whose presence reminds the people that Britain's greatness is due primarily to the Navy, and only secondarily to the Army. I suggest, therefore, that a *corps d'élite* of Marine Volunteers should be raised in the metropolis, and attached to the Brigade of Guards, to establish still more closely the connection between the personal guards of the Queen and the Navy which is the great guard of the Sovereign of the Seas. Her Majesty's ship "President," in the West India Docks, would suffice for the present for the naval wants of the Corps until such time as the patriotism of officers supplied a building to house the guns lent by the Admiralty, and the London corps could count on receiving a right hearty welcome on going down for its Easter or Whitsuntide training to any place where Sailors or Marines are stationed. There can be no doubt that great advantages would accrue from the establishment of Volunteer

Marine battalions, not the least being the renewed connection between civilians and the Naval Service, which was severed when the Royal Naval Artillery Volunteers were disbanded; and advantage should be taken of the renewed interest which the public is showing in naval matters to make that interest permanent. If the five battalions already advocated proved a success, the movement might be extended to the principal seaports of the Kingdom, and use made, where practicable, of the training facilities afforded:—Firstly, by the battle-ships and cruisers employed for Coastguard and Royal Naval Reserve duties; and, secondly, by the drill-ships and R.N.R. batteries, most of which are supplied with modern breech-loaders and quick-firing guns. A permanent tie would be set up between citizens with a taste for sea-service and the Navy itself, and with local interests thus focussed we should secure for naval matters large influence and support. Such a force eligible for sea or land would, in addition to the active service afloat, volunteered for by some of its members, be able to render such services as the guarding of signal stations or the naval stores, and in some places might take the place of the Coastguard temporarily, if that force were embarked. With official encouragement it is probable that, even by the end of this year 1897, a Volunteer Reserve of considerable strength might be raised at the comparatively small cost to the Navy Estimates of the capitation grants and allowances.

Marine Militia battalions might also be instituted with advantage, and be taken from a larger area than the proposed Volunteer corps. It is understood that the fisherman and boatman classes along the south coast are altogether opposed to the idea of becoming soldiers, but are believed to look with a friendly eye on anything to do with the Naval Service. These men work very hard at their vocations for many months in the year, but there are periods when there is little else for them to do but to loaf about with their hands in their pockets. If the annual training of the proposed Marine Militia battalions could be arranged for these slack, out-of-work times, it is anticipated that seafaring men would join in considerable numbers, and welcome as an outing the month's training at a Marine headquarters.

It is not unlikely, also, affiliated Militia battalions would feed the Corps with a very desirable class of recruits. Of course, in case of war, these battalions would be liable for service anywhere, and, when embodied, would be practically Marines, and already somewhat sea-salted. The nucleus of these corps might be formed of Marine pensioners, who, if fit in every respect, should be induced to enlist for five years by the prospect of getting the Greenwich Hospital age pension of 5d. a day at the age of 50, instead of at 55 as at present. These men would form a connecting link with the Marine Divisions, and would instil into the younger men the excellent ideas of the Marine proper, and at the same time, be the mainstay of discipline. I would suggest that each corps of Marine Militia should be raised from two sea-board counties, viz., from Essex and Kent for the Militia battalion trained at Chatham; from Sussex and Hants for the Marine Artillery Militia coming to Eastney; from Dorset and Somerset for the Marine Infantry Militia to be trained at Gosport;

and from Devon and Cornwall for the corps whose Marine training is to be done at Plymouth.

The last part of my proposal is, perhaps, the most important of all, albeit the shortest, viz., the extension of the Marine Militia or Volunteer system to the Colonies. In 1862 the House of Commons resolved "that Colonies exercising the right of self-government ought to undertake the main responsibility of providing for their internal order and security, *and ought to assist in their own external defence.*" Three years later, as a corollary to that, the "Colonial Naval Defence Act" was passed; and it gave power to any Colony to provide vessels, to enrol Seamen, and "to raise and maintain a body of Volunteers for general service in the Royal Navy in emergency." The defence of our island possessions is far more a naval question than a military one, yet the local forces in these places are nearly all military, for the reason that the general conditions of Imperial Defence were but little understood five and thirty years ago.

Thus it has come about that the Navy is not Imperial in the sense that the Army is Imperial, and except as regards Australia none of the Colonies have any connection with it. At the time when the defensive arrangements of the Colonies were under consideration, the importance of the Navy was altogether underrated and the Army was all in all. Consequently, all the bodies of men raised were of the War Office pattern, rather than of the Admiralty pattern. As regards the self-governing Colonies, little was done towards taking a share in external defence, and in the other Colonies no advantage at all has been taken of the Act of 1865.

As long as our fleets hold the command of the sea, it is inconceivable that a serious military descent could be made on any island colony; consequently, the local forces take no share in their own external defence, which is left to men who have come out from England. Military preparations in most of the Colonies must, therefore, have the air of unreality which attaches to things made only for show and not for use.

The ruling condition of the problem of Imperial Defence has for its first postulate the command of the sea, in which the colonial forces take no part whatsoever. At the outbreak of a great war, all our foreign squadrons would be reinforced, and to man the ships required for those reinforcements reliance would necessarily have to be placed on the Seamen and Marines at home and their Reserves. But when once the ships have left these shores, we must either rely upon men sent out from England or upon local Reserves. With the enemies' cruisers about, it might be a matter of some difficulty to send naval ratings and Marines out to distant stations. In any case, it would be a work of time, and it is not difficult to imagine circumstances when time would be of supremest value. Surely it would be wise to have some local Reserves on the spot? Except in the Australian Colonies, nothing has been done to supply locally the needs of the Navy in men, and none of the local forces are by training and organisation fitted to take their places on board ship.

I therefore advocate the formation of a Marine Militia or of Marine Volunteers in our various Colonies, and herein may lie the germ of a real

Imperial Federation for defensive purposes. If a part of the local forces of every Colony were Marines, every portion of our Empire would be associated in the great Service whereon, under the good Providence of God, its safety, honour, wealth, and strength do mainly depend. The experiment has recently been made with success, in Canada, of interchanging for a time a company of a Volunteer regiment with a company of Imperial troops. With Marine local forces at our various Colonies a similar exchange of ship Marines and local shore-going Marines might be made temporarily, with great advantage to both. For instance, if there were a local battalion of Marine Militia at Sydney, the men would be available for service in the fleet within the limits of the Australian Station. Their radius of action would be thus increased, and they would be taking a real share in the defence of their country, and would be assisting to man vessels which are in part their own property, and for which they have to pay. The subject is such a wide one, that in the scope of a paper of this kind it is only possible to briefly refer to it.

Next to the name and personality of Queen Victoria, the Navy is the great cementing force that binds this Empire together, and no apology is necessary for any proposition tending to give the Colonies an active share in the manning of the great Navy which is now Royal, and may one day be Imperial in name, as well as in deed.

If it be the destiny of the Marine Forces to take a prominent part in the glorious task of further consolidating and knitting together the sea-girt portions of an Empire which is *per mare, per terram*, then truly will that ancient Force be filling the *rôle* prophesied for it by the great admiral Earl St. Vincent, of being one day the country's "sheet-anchor," and thus securely binding together Britain and her Colonies through the Navy. In such a case the Royal Marines would become, in the fullest sense of the word, an Imperial Reserve.

Admiral F. A. CLOSE:—The lecturer has remarked that the subject of his lecture has been brought before the House of Commons by Admiral Field; the admiral received a favourable answer from Mr. Goschen, and no doubt this lecture will be of some assistance when the Admiralty carry out the scheme. I am afraid some of us are strangely ignorant as to what a Marine is! You know what soldiers and sailors are. What is a Marine, how is he trained? He is sent when he enlists to the depôt at Walmer, where, in seven months, he is made into a soldier; he is then sent to headquarters, where he is made into a naval gunner, and taught how to knot and splice, lash up a hammock, etc. Then he embarks and becomes a seaman, and, in days gone by, he was willing to go aloft and work the square mainsail in our short-handed small craft. Thus you see what a valuable article a Marine is, if he is kept afloat one year out of every three—one year for harbour service, and one year for barracks; this will be absolutely necessary, if the force is largely increased, to keep their sea legs in order, as we don't want soldiers. To encourage the Naval element, I would officer the Marines with the senior lieutenants of the Navy, whose discontent and disgust, from want of promotion, would be thus removed by a spell on shore, and the Marines rendered more serviceable by embarking with a useful Naval officer instead of a (soldier) Marine officer. The facts the lecturer has brought before us as to the pay, the allowances, and the feeding of the Marines, are such as in all justice deserve grave consideration. The lecturer got out of his depth on the question of the Royal Naval Artillery Volunteers. As Hon. Commander of the Bristol Brigade, the First Sea Lord

of the Admiralty assured me that if the other brigades throughout the country had been as efficient as the Bristol Brigade, the Royal Naval Artillery Volunteers would never have been disbanded, the reason being that the Bristol Brigade was always commanded by Naval officers. H.R.H. the Duke of Edinburgh, Hon. Colonel of Royal Marines, considered it was my objections that prevented the Royal Naval Artillery Volunteers becoming Royal Marine Artillery Volunteers. I assured him it was not so; volunteers love their uniform; the proclivity of these volunteers was nautical; they would not wear a soldier's dress; to see these men going down the Bristol Channel for a holiday from Saturday to Monday in their open men-of-war boats in the vilest weather showed their love for the sea; as boatmen they were perfect, as naval gunners perfect. Yet these are the men the lecturer calls "successive failures." He, like Admiral Tryon, had never seen them, never even inspected them! As to the scheme for a Marine Reserve, it is an admirable scheme. We cannot now man Her Majesty's ships without depending on that half-drilled force called the Royal Naval Reserve—a force recruited chiefly from 60,000 British merchant seamen—all of whom will be required on the outbreak of war to man our merchant-ships, who bring us our daily bread.[1] On the outbreak of war every ship and every gun in the Royal Navy must be manned by the regular forces of the Navy. To trust to a Naval Reserve from the merchant service, and fishermen who have—some of them—never seen a gun fired (as at Bristol), is courting destruction of the Navy and the nation. Increase the Marines to 30,000, backed by a Marine Reserve, and we shall be able to meet the French naval gunners on equal terms numerically, which we cannot do at present.

Captain Sir JOHN C. R. COLOMB, K.C.M.G., M.P. (late R.M.A.):—I hardly followed the gallant admiral in what he said respecting the reference to the principles announced in the paper with regard to the Naval Artillery Volunteers. I understood him to say that he could not train sailors on land, but he could train seamen. However, I personally do entirely agree with the lecturer in what he says as to the reason of the failure of the Royal Naval Artillery Volunteers, and I may say that when Lord Brassey was first proposing to inaugurate that force he did me the honour of consulting me, and in looking at the scheme I concluded it was fore-doomed to failure. I think I agree entirely with what the lecturer has said on that point. With regard to what the lecturer has said respecting the affiliation of a certain proportion of Militia and Volunteers with the Royal Marine Artillery and Royal Marines, I am entirely agreed, and I think also not only with regard to the head-quarters at home, but with regard to the headquarters of the naval stations abroad, where, in my humble judgment, there should be quartered a proportionate force of Royal Marines. Now, I wish to point out that it seems we have arrived at a period when there is no policy at all with regard to the Marine forces. The Marine Service has grown by degrees out of the conditions of the past. My contention is illustrated by a reference to the proportion of Marines to the total naval force. I am not going to weary you with figures, but to illustrate what I say with regard to the apparent absence of a distinctive policy as to the use, place, and application of Marines, I will just give one or two facts very broadly. If we take the period covered by the Queen's reign, you had in 1836-37 26·7, or very nearly 27 per cent. of the total naval forces Marines; and without reading all the figures down in each decimal period since then, it comes to this, that you are going on reducing the proportion of Marines to the total Naval Service. But side by side with that you have got this very

[1] The uniform and rank which we have given to masters and mates in the merchant service has made them ambitious, so they want to carry guns instead of cargo; they are welcome to all the glory, if they will only bring us the food, without which we must all come to grief.

remarkable fact, as indicating that there can be no policy as regards Marines. You start sixty years ago when steam was practically unknown, and yet at that time you had a high percentage of Marines. You come down now to the time when you abolished masts and yards altogether, and you have reached a minimum over a period of over sixty years, of the Marine portion of the Royal Navy. The lecturer observes that it is about 17½ per cent. And if you divide the sixty years into periods determined by the general character of your fleet, you find this, that in the period of sailing-ships the proportion averaged 26·4 Marines of the total naval force. If you come to the days of the auxiliary steam period you find it was 23·5. If you come to the period when steam had asserted its superiority, but you still had full-rigged ships, you find it was 25·76. But now when you come purely and absolutely to mastless ships and to entirely deck duties, you have only 17½ per cent. I think that does illustrate my contention that we have not got clearly a distinctive policy with regard to the place of Marines in the *personnel* of the Navy at this moment. Of course, it is not fair to try and support that statement with reference only to the fact of sail *versus* steam, because you must bear in mind that before the middle period was reached you revolutionised your Navy by the most statesmanlike act of the continuous-service system for seamen. In 1853, as regards the discipline of the Navy, that Act really entirely changed the relation of the Seaman to the Marine, and *vice versâ*; but as regards the actual fighting capacity and the working of the ships and the duties of the ships, the taking masts and yards out of the ship has, I think, rather developed the importance of the Marine; and yet, as I said before, the figures and everything connected with the Service show that though this is the case you are pursuing a policy of reducing. That is a very material point, but it is one which I am not going to occupy the time in further elaborating. Now, coming to the question of a Marine Reserve. In broad principles I entirely agree with the lecturer, but taking that in connection with what I have just said I will remind you that the last time we thoroughly overhauled the question of the *personnel* of the Navy was in 1859 by the Royal Commission on Manning the Navy. If you read the evidence you find the preponderance of expert evidence there was against the supposition that you either could fight great actions or maintain a Navy depending wholly on steam, and from one end of the long report itself to the other the word "steam" is not mentioned at all. But taking that as a fact, that they regarded sail power primarily, and took no notice of steam, what were the recommendations of the Commission with reference to this very Marine force? It was this, and I will read it shortly:—"There is ordinarily a Reserve of 6,000 Marines in the home ports ready for active service afloat. We think that this force might with great advantage to the State, and without impairing its efficiency, be increased by about 5,000 men, who would be well qualified to garrison the sea ports in time of peace, and when required to serve at sea they could be at once embarked, and their place in the sea ports supplied by the Regular Army or the Militia." That is the principle initiated by the lecturer. What I want to point out is, that in days of pure seamanship and sailing-ship the Royal Commission, having investigated this subject, gave it as their opinion that the force of active Marines on shore should be 11,000. Further, they went on to the question of a Marine Reserve, and they said, "There can be little doubt that a large Reserve of short-service pensioners, twelve years' men, could be formed out of the Marines. A corps of several thousand could be formed in this manner, and we highly recommend it should be done." Recollect what the proposal was. It was to increase the Marines so as to keep 11,000 men on shore and to have a big Marine Reserve besides, and all that in the days of what were practically fully-rigged ships. Now, having come to the days of mastless ships, you are reducing the proportion of Marines instead of increasing them. The commissioners actually fixed the number of Reserve Marines; "there should be," they said, "5,000 men." That was making up a Marine Reserve of altogether 16,000

men to be left on shore. I think that illustrates also what I say, that we do not seem to have a policy about this Service at all. My contention is that a most valuable Service is now being more or less allowed to suffer from a want of breadth of view, or the want of having a definite policy. They have most distinguished heads in departments, but they don't seem to have a broad, definite policy as regards Marines. I should like to point this out with regard to what the lecturer has said about the association of the Colonies through the operation and the application of the Marine forces. That is a very old theory of mine, and one I now entirely endorse; and I think myself that we have to look, in order to find the true place and application of the modern Marine, a little wider even than the Navy. Any attempt to dissociate the Marine from the Navy would be false in policy. That I am clear about. The next point is this: You are in this position, that your Navy has no Reserve on its foreign stations. You keep no Reserve on your foreign stations—that, I think, is a blot. The fact of having Marines on stations would be an inestimable advantage to the exercise of your naval power on an emergency. In the long run, I believe, it will be found to be absolutely and distinctly necessary. That being so, if you have, for purely naval reasons, on your naval stations abroad a Reserve of men trained efficiently to sea service, obviously they must be on shore. As a gallant admiral said, you do not want to keep your seamen on shore—therefore your Reserves for the Navy abroad should be Marines. That being so, what are you going to do when you have to remove those Marines for naval purposes? You must replace them. In most places, where there are Militia and Volunteers, if they are associated with Marines, they will take their place, as the lecturer has indicated. Lastly, the consequence of your reducing your proportion of Marines to the whole naval force is this—you are giving your Marine more service, as a matter of policy and as a matter of practice, than he ever used to have in the old days of sailing-ships. A Marine then passed the larger part of his time on shore, but now he is spending more time at sea than on shore. That is because you are not keeping up your ratio of the Marine Service to the whole Naval force. I am credibly informed that this is exercising a very injurious effect upon the Marine force, and if it is allowed to continue you will not have the thoroughly efficient Marine force you had in days gone by. For this reason there is, I am told, a greater hesitation on the part of the men to re-engage, because they get no time on shore, and they are beginning to think that after all the Army is the better of the two. Now, that is serious as regards the popularity of the corps. Under the old system it was proved by naval experience that a Marine did require, when he returned from his tour of foreign service, brushing up, reviving his drill and reviving barrack discipline. Because your proportion of Marines is not sufficient now you do not give them time, and the men by reason of not having time to re-train are not properly re-trained, and that is diminishing their efficiency. Again, there is no opportunity of selecting the non-commissioned officers, by reason of the men not having long enough at home, after having returned to barracks, to find out who the proper men are to be selected for non-commissioned officers. I would ask you, Lord Charles, for all those reasons—nobody commands so much power of influencing the public opinion as yourself, and it is public opinion that makes Parliament and the Admiralty jump—I do ask you, and I ask everybody, to turn over in their minds this question of a broad policy with regard to the present use and application of the Marine forces. You cannot now carry all the supernumeraries on board ship, and you must have a Marine force in any event. Under those circumstances, I welcome the lecture as most opportune, and I think it has been most ably put together. It is a mine of valuable information, and I may be allowed to congratulate the lecturer on having given to us this paper which is so valuable and so useful, and I trust that it will not be without its effect in making our administrators and all who have the interests of our Navy at heart think whether it is not desirable to alter the present policy.

Vice-Admiral Sir NATHANIEL BOWDEN-SMITH, K.C.B. :—Before making a few remarks on this paper, I should like to assure the lecturer how glad the Council of this Institution are to have a lecture from an officer on the active list, and I am very sorry the audience is not a larger one. I think the lecturer is also to be congratulated on having obtained the services of Lord Charles Beresford as chairman, he having taken such a great interest in this question of the Reserves. In my opinion one of the cheapest and best ways of adding to our Reserves in the Navy is to largely increase the force of Marines, because we have in them a body of men who are well disciplined, well trained, and ready to embark on board our ships at a moment's notice. It is an interesting fact that when the Marines were first raised, as I understand in 1684 "the original aim, since modified, was that they should form a nursery from whence to obtain seamen to man the fleet, the commerce of England being then too limited to procure from out of the merchant fleet sufficient seamen for the public service." We all know that in those days many of our seamen were impressed men, and not very amenable to discipline, and it was thought absolutely necessary to have a body of trained troops on board most of our ships to preserve order; and when at times Marines could not be obtained, troops of the line were embarked, and often took an active part in operations afloat. We may remember in later years that notable case in which the gallant Pearson with his men were among the first to board the "San Nicholas" and the "San Josef" at the battle of St. Vincent. It is a curious fact, too, that the original force of Marines was only 1,200 men. Afterwards the numbers were increased and decreased, until in 1714 they were abolished, and we had no Marines for about twenty-five years. In 1739 they appear to have been re-constituted, but disbanded in 1748; and it was not until 1755 that they were finally enrolled and put under the sole control of the Admiralty, where they have since remained, and have been a most valuable portion of the Naval Service. As the lecturer says, they not only take part in all the ordinary duties of the ship, but they man the guns like the seamen, being now thoroughly trained in gunnery whilst in barracks. With regard to the proposal of the lecturer to form a Reserve of Marines, it seems to me a most excellent one. As a naval officer, I think that a Reserve formed of Marines would be as valuable as a Reserve formed, say, from fishermen. I do not mean to say a word against fishermen, who are a hardy race of men, and who, I suppose, spend more time at sea than any other class of sailors in the world, and who brave dangers and hardships of every kind in order to procure us a very valuable article of food; but their life is so very different from a man-of-war's-man that if I again were captain of a ship and short of men, and I were offered to fill up my crew with fifty fishermen Reservists or fifty Marine Reservists, I think I should be inclined to choose the latter, though perhaps it might be well to have some of each, as we must always have sailors to man the boats, to do anchor and cable work, and other seamen's duties. The lecturer refers in the last part of his paper to the great desirability of having some Reserves in the Colonies, and he says that up to the present time, with the exception of the Colonies of Australasia and New Zealand, no other Colonies have attempted to assist in the defence of the Empire afloat. They have assisted in defence of their own harbours, but not generally in the defence of the Empire. I am very glad the lecturer mentioned that fact, because the Australian Colonies have been the first to contribute towards the Imperial Navy; and although the sum they contribute is small in comparison with our very large Estimates, still they ought to receive every credit for being the first to come forward. After all, we must remember that they have no voice or control in the disposal of the vessels, and it would be unfortunate for the Navy if they had. If they subscribed largely they might probably want some control, which would not be conducive to the welfare of the Service or the good of the country. There has been, however, no attempt at present to form a Reserve for service afloat. At the two principal ports, Melbourne and Sydney, there is a large body of so-called seamen who are trained in rifle and field gun drill, and are partly paid

by the Colonial Governments, but they cannot be called upon in times of emergency to go to sea in our cruisers, and they are in no sense under the control of the Naval Commander-in-Chief. In Melbourne, it is true, they man the harbour ships and torpedo-boats, and are there for the defence of the port; but as regards Sydney, there does not appear sufficient reason to maintain such a large Naval Brigade unless they were available to fill vacancies in our ships in time of war. If in any future arrangements with the Colonies of Australia and New Zealand they could be induced to form and maintain a Naval Reserve in addition to contributing towards the expense of the ships considerable progress would be made towards the general defence of the Empire. The men could be embarked on board our cruisers periodically for a month or six weeks' training—ten, twenty, or thirty men, according to the size of the ship—and in that way they would be kept efficient and form a valuable Reserve.

Admiral CLOSE:—Are they Naval Volunteers?

Sir N. BOWDEN-SMITH:—They are volunteers, but are partially paid. They have been mostly sailors.

Admiral CLOSE:—Are they called Naval Volunteers?

Sir N. BOWDEN-SMITH:—No; they are called a Naval Brigade. I entirely concur with the lecturer where he says that our food supply must be maintained and cannot he allowed to be chiefly in the hands of foreigners. We have a number of big steamers on the Admiralty list, and it is well that it is so, because we keep other people from getting hold of them; and in the event of war they could, to a certain extent, be utilised as armed cruisers; but it would be the greatest mistake in the world to take all those ships off their regular routes. I was asked the other day by a man in Australia if a war broke out what I would do with some of the large P. and O. and Orient steamers using Sydney as their terminus, the idea being apparently in his mind that I would seize those ships and use them on the station as armed cruisers. I replied that my great object would be to keep them going on their business. We were talking just now of fishermen. In the same way fishing is one of the great industries of the country, and it would be a very serious thing if we took all the fishermen away, or a very large portion of them. If our trade were very much interfered with and our food supply reduced, we should have discontent and poverty in England, and it would be a very serious thing for the Government of the day. England does not want to go to war with anybody: "Give peace in our time, O Lord," is a prayer we can all use daily with great propriety; but the time may come when we are, so to speak, driven to war, and it would then be everything for the Government to have the people at their back. If there were starvation and great poverty at home, the Government of the day might be forced by the people to make an ignominious peace which would be very disastrous, as they probably would not have attained the object for which they had reluctantly drawn the sword.

Captain R. B. NICHOLETTS, R.N. (Retired):—In the first place, I must add my congratulations to the lecturer for the very interesting and able lecture which he has given us this afternoon. I have listened to it with a great deal of pleasure and a great deal of profit, and I think I may say that with one exception I agree with nearly every line in the paper. To those who take an interest in all that concerns the Navy, it is perfectly evident that the question of Reserves for our fleet is one of the most important with which we have to deal. Its urgency cannot be denied, touching as it does the very roots of our Naval Power, and it is one which will have to be seriously and strenuously dealt with. The mercantile marine, which has been well called the "Backbone of the Nation," upon which we depend for our commerce, our food supply, and our Reserves in time of war, is so largely manned by foreigners to the extinction of the British seamen, that it is doubtful whether it can furnish a sufficient number of men to fill up the casualties inevitable during war, and at

the same time carry on the commerce of the Empire; it is, therefore, necessary that we should look to other sources of supply, the opening up of which has been indicated in the lecture we have listened to this afternoon. But what I particularly wish to say a few words upon is the late corps of Royal Naval Artillery Volunteers, that is to say, as regards the Bristol Corps. Of this particular body I can speak from my own experience of them. I was not a member of the force, but for nearly seventeen years they were constantly under my observation in their boat exercises, etc., in the Bristol Channel, under all conditions of weather, at times when it would have tested the skill of the most experienced in those stormy waters. They were excellent at gun and other drills. They were smart, well dressed, well behaved, zealous, and willing, proud of the uniform they had the honour to wear, proud of belonging to the corps, and although now disbanded, they still keep up the old ties of comradeship. I think, myself, it was a mistake to disband them, particularly as the naval spirit has, to a large extent, fallen into decadence in the United Kingdom, and anything which tends to foster that feeling should be encouraged. I am sorry to say it, but there is not that intense love of the sea which formerly animated British lads, and there is a very large proportion of the population—forgetting what they owe to the sea—who may be said to have "lost the touch of the sea." These Royal Naval Artillery Volunteers formed, not only what might have proved a valuable Naval Reserve, but they came from that class from which our seamen are drawn, and were reviving that old sea spirit, which unfortunately has so died out amongst the working classes in this country. I think also they were hardly fairly treated. They were full of work, anxious, and zealous to do all they possibly could, to make themselves efficient; and what was done to train them at sea? A slow and obsolete gun-boat of limited accommodation—more fitted to disgust them with the sea than to encourage them—was occasionally placed at their disposal in the stormy sea of the Bristol Channel and its neighbourhood, and I do say that if they had had a modern and efficient vessel to do their sea training in, they would have formed a valuable Reserve for the Navy in time, and I have no doubt would have performed excellent service for their country. I can only repeat my regret they were disbanded.

Commander W. F. CABORNE, C.B., R.N.R.:—I merely desire, my lord, to bring to the notice of the gallant lecturer a slight error into which he has inadvertently fallen. In his lecture he states that of the Naval Coast Volunteers, the Royal Naval Volunteers, and the Royal Naval Artillery Volunteers, none now remain. While the first and last mentioned bodies have undoubtedly disappeared, the Royal Naval Volunteers raised under Act 22 and 23 Vict., cap. 40, still exist—as I trust they will for centuries to come—although they are now known as the Royal Naval Reserve. It is precisely the same force raised under the original Act, but its constitution has been altered and improved from time to time, and its efficiency has been very materially increased of late years.

Major A. F. GATLIFF, in reply, said:—As regards the points brought forward by Admiral Close and Captain Nicholetts with reference to the Royal Naval Artillery Volunteers, I am fully aware that the Bristol Corps was at a high standard of efficiency; but I have had some personal experience of one of the corps, and perhaps I had better not say what was observed one day when they went to their firing. Anyhow, I think that no sailor—no officer in Her Majesty's Navy—would allow that the men were efficient. I gathered from talking to some of them that their ordinary employment was as clerks in mercantile offices. A corps of Royal Naval Artillery Volunteers made up of such civilians may be dressed as sailors, but they are not seamen, nor can they be made into seamen in the time available.

Admiral CLOSE:—Was there no naval officer in command?

Major GATLIFF:—Only for the day. I also believe that if it had been possible to appoint naval officers to the command of the various corps, doubtless they would

have been as efficient as that at Bristol; but one of the very questions referred to by Sir George Tryon was the difficulty of providing suitable instructors. In the report quoted it states:—"The difficulty of supplying efficient and suitable officers in command would be satisfactorily met in a corps of Royal Marine Volunteers." That, I take it, is one of the very causes that induced the Admiralty to disband the Royal Naval Artillery Volunteers. As regards Admiral Close's query about the discharge allowance paid to a Marine who leaves the Service, I think that is perfectly accurate.

Admiral CLOSE:—I did not question its accuracy; I question its policy.

Major GATLIFF:—With regard to Vice-Admiral Bowden-Smith's remarks, I have to thank him for the kind way he has referred to my lecture. As to the fears he expressed, that possibly if the Colonies make contributions in men and money to the Royal Navy they might desire to control and to exercise some influence upon the movements of the fleet, I think we may safely trust to their patriotism just as much as we trust to the patriotism of the people of England. I take it that in England no single soul, except in some obscure point, would desire to exercise any control whatever on the admiral in whose hands the destiny of the Empire is placed for the time being. One of the reasons I have for hoping that one day the Royal Navy will become the Imperial Navy is based on the fact that the very name "Imperial" would tend to educate the British public in the knowledge that the best form of action for that Navy need not necessarily be local, and that complete trust must be put wholly and solely in the admiral selected for the command, whether it seems to him good to take every ship out of the Channel or not. Respecting the weighty words of Sir John Colomb, I am very much indebted to him for the generous way he has referred to me. I also desire to apologise to him in that I have used some of his ideas without acknowledgment. There is to-day no greater authority on anything connected with the Royal Marine forces than Sir John Colomb, and incidentally I may mention that the corps is very grateful to him for the way he has fought its battle for twenty-five years. I will close my remarks with thanking you, Lord Charles, for your kindness in undertaking to preside at this meeting, and for your flattering allusions in general; and you, ladies and gentlemen, for the patient way in which you have listened to my too lengthy lecture.

The CHAIRMAN (Lord Charles Beresford):—Perhaps you will allow me to make a few remarks before we close this very interesting discussion. I think the lecturer must be very well satisfied with the debate that has succeeded the reading of his paper, because there is a unanimous opinion, so far as I can see, as to the utility of his paper, as to the clearness of his ideas, and as to the necessity for something being done with regard to this very grave question. There is no doubt in the world that among the very grave questions that there are at this present moment connected with the efficiency of the fleet, the question of the Reserve is the most important. The Government, I think, are very well aware of the case. In a discussion of this sort, I imagine that authority will be very pleased to see the ideas that have been brought forward by an officer on full pay. Occasionally I have heard that authority do not quite like lectures in this place; but I do not believe it. I do not believe authority would be so small as that. My view is that authority would do what is right, that if any officer on full pay, or any officer on half pay, said or did anything against discipline, or with the idea of undermining authority, or from personal objects, authority should be immediately down on him. But, as long as an officer reads an important paper, such as we have heard this afternoon, simply stating the facts of the case, authority should be very much obliged to him for what he has done. I remember that Lord Brassey called attention to this question of the Reserve in 1886; but Sir John Colomb has pointed out that many years before that, the question of the Reserve was, as far as the Marine Reserve is concerned, called attention to—I think he said in the year 1859. That shows

that in those days there was an idea that such a Reserve should be created. It appears to me the Government have recognised the question of Marine Reserve, and I do say this for the present Government and the preceding Government—that eight years ago the Navy had got into such a shocking state altogether, in all its auxiliaries, in the question of the number of ships, of having no policy of defence, of having no plan of campaign, and nothing whatever of a business-like arrangement for our defence; that they had a very great deal to do to get things right, and therefore, having seen what they have done this year, and having seen what has been done during the last eight years, it would not be generous or advisable to press for too many things at once. At the same time it is wise to call attention to those things which will have to be taken in hand in the near future. When a thing gets as bad as our British Navy had got eight years ago, it would be impolitic, and it would be unwise, to try to do everything at once. Authority began well; they began by building ships, and when you get ships you can point the British public to the ships, and say, "We want a few men to put into them." It is the same way with the Marine forces. You may point to the Marine forces being increased and say, "Now we want a Reserve for these forces." The lecturer remarked as to the Manning Committee, and said he was in the dark as to the Manning Committee. Nobody need be in the dark with regard to the facts the Manning Committee have to determine, for this reason: you have only got to add up the number of ships in the Navy List (which you can buy for two shillings), and multiply that by the number of men who form the ships' companies, and you will know exactly what you require for the fleet. Everybody in the country can do that. We know perfectly well what the total complement of the ships of the fleet ought to be in numbers, but there has been a mistake made by authority which is quite unaccountable, with regard to the numbers they have got—not the numbers they ought to have, but the numbers they have got. They are 14,000 men out in the numbers they say they have got. I only mention this because it is *à propos* of the paper. Out of that 14,000, according to the calculations, 3,000 would be Marines. Then there is the question of the Reserve of the Marines. I am not so well able to judge as the lecturer, because I have not worked the question up. I have taken the question as a whole, the whole Service, and I count the Marine the same as I do a Bluejacket, one to man the ship and one for the defence of the country. The lecturer has put down that we have only got some 600 Marines in the Reserve. That apparently is a very small number, but out of that number he has pointed out something not generally known, namely, that a great number of them are not privates, but sergeants and non-commissioned officers—in fact, not the people you would want for a Reserve. You should have a man more or less in the prime of life to join the ranks, more than men as non-commissioned officers. Then the lecturer pointed out what he described so well as the emergency sources, and he said that we should not for some time to come get the men newly organised to serve as seamen. That is perfectly true, and there is no harm in calling attention to that fact before the emergency occurs. Then in No. 2, the lecturer called attention to a point which I hope will soon be taken up by the Press and Parliament, as to the seamen in the merchant fleet—that we really have no Reserve there. No matter what we may put on paper, we have no absolute practical Reserve that we can rely upon if suddenly we are called upon to go to war. The lecturer also called attention to the Army system of the Reserves, and he said it should be the same in the Royal Navy, in which I heartily agree. The Marine Reserve, if formed, should be precisely on the same principle, and I think the lecturer is to be congratulated on his plans. They appear to me to be perfectly possible, feasible, and very practicable. There is one point which I was not aware of before, and that is the question of the rations of the Marines. If that point is so, I do not think the British public know it; but if a Marine is in a different position to either a soldier proper or a sailor proper with regard to his rations, I am perfectly certain it will affect the recruiting, and I am perfectly

certain it would have affected the recruits in days gone by had the working classes known that that was so. I think that the sooner my friend Sir John Colomb asks a question about that in the House of Commons, and the point is brought before the public, the better it will be. The lecturer also made some remarks as to the complaints of the Navy not being more represented in the country. I was very glad to hear him say that, and I want to hear more of my brother officers say it, and more of the Press say it, for the simple reason that the Navy would never have got into the position it did get into with regard to efficiency, numbers, strength, and organisation—in my humble opinion it would never have got into that position if it had been properly represented. At this moment it is hardly represented at all. Why was not a young lieutenant sent out in the Mission to Menelik in Abyssinia? There were three young Guardsmen, all great friends of mine, who went—I am not saying a word against their going; but I should like to have seen the Navy represented in all public functions. There should not be a single public function, or a single matter of that character, without the British Navy being represented; and I hold that view most strongly. In fact, I am perfectly certain that if it had been represented in many places in years gone by it would never have got in a state in which our Empire was absolutely threatened with destruction. Why do I say so? *I can prove my point. Why have we spent 55 millions in the last eight years if the Empire was safe before? The thing is perfectly clear to every housemaid. Then there is the question of extending the Marine Militia. It is an excellent idea, I think, to have a Marine Militia such as the lecturer proposes; and also to have a Marine Volunteer Corps, such as the lecturer proposes. I am perfectly certain the men will join that, and I am perfectly certain that if the Government help in any way, when they have a little more time, they will entertain this question, and it will be very much to the advantage of the State. The question of the Colonies is a very large question, and I congratulate the lecturer on the language he has used, which is better than the language I shall use, so I shall just quote it. He says, "When once the ships have left these shores we must either rely upon men sent out from England or upon local Reserves." That hits the whole point. We ought to have local Reserves in the Colonies and abroad, and Reserve ships wherever we can put them. You get those people who know the tides, know the shore, know the points, know the headlands and all about the local place, to come on board a ship and man the ships, with the additional enthusiasm of having to defend their own homes. From all points of view that is a question that I think should be taken up very strongly. We must consider the question of local Reserves on our outlying stations. The lecturer made some remarks—he will pardon me saying it, all too few—in praise of his corps, the Royal Marines. The Royal Marines have the most thorough appreciation of every seaman, I do not care whether he is officer or man. We cannot do without them. We recognise all that they have done for us, and more than that, we recognise all that they have done for the country; and some of us recognise that they have never been properly appreciated. I hope to see the time when the naval bases will be under generals of the Royal Marines with their forces there, and we could draft the men through the fleet to the coaling stations and naval bases. You would thus have an enormous decrease in the amount of your expenses, and an enormous increase in the amount of your vital efficiency. I hope to see the day when that will come, and I am looking forward to the fact being more apparent to my countrymen, as a whole, of the truth of Lord St. Vincent's saying, that "Whenever the country gets in danger, your Marines will be your sheet-anchor." I am satisfied that that will be so. They can do what we can do aboard ship in nearly every particular, and they can do very often more on shore. Ladies and gentlemen, I must conclude the discussion by thanking the lecturer most warmly on the part of the Service for the lecture he has brought forward, and also thank him on the part of myself for having honoured me by asking me to take the chair to-day.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Admiral—Sir Michael Culme-Seymour, Bart., G.C.B., to be Commander-in-Chief at Portsmouth, vice Admiral Sir Nowell Salmon, V.C., G.C.B. Rear-Admiral—A. K. Wilson, V.C., C.B., to be Controller of the Navy. Captains—W. Mc.C. F. Castle to "Mersey"; H. A. Onslow to "Northampton"; C. R. Arbuthnot to "Blake"; G. A. Callaghan to "Hermione"; H. C. Bigge to "Collingwood"; E. F. Jeffreys to be Director of Naval Ordnance; L. E. Wintz to "Charybdis"; D. Mc.N. Riddel to "Renown"; W. H. May to "Excellent"; F. C. B. Bridgman to "Victory"; W. B. Graham to "Blenheim." Commanders—T. M. Fraser to "Cossack"; H. G. King-Hall to "Sharpshooter"; F. G. De Lisle to "Scout"; A. H. Anson to "Hearty."

The first-class cruiser "Royal Arthur" is to replace the "St. George" as flag-ship on the Cape station. The second-class cruiser "Flora" has left Plymouth with a new crew for the third-class cruiser "Barrosa" on the Cape station. The first-class cruiser "Edgar" which brought home the relieved crew of the "Undaunted" from China, paid off at Devonport on the 20th ult. H.M.S. "Ringdove" has arrived at Plymouth after two commissions on the Australian station, and was paid off on the 17th ult. The Admiralty have determined to send six more torpedo-boat destroyers to foreign stations. The "Virago" and "Thrasher" will go to the Pacific under convoy of the "Leander"; the "Quail" and "Sparrowhawk" to the West Indies under convoy of the "Blenheim"; the "Whiting" and "Shark" are to proceed to China, where there are already two of the class, the "Hart" and "Handy"; while the "Foam" is to make the sixth of these vessels in the Mediterranean.

The new torpedo-boat destroyer "Panther," built by Messrs. Laird Brothers, Birkenhead, has had a very successful series of steam trials on the Clyde. She made six runs over the measured mile off Greenock, and, with her engines developing a mean I.H.P. of 6,000, she attained a speed of 30½ knots an hour. She was then subjected to a three hours' full-power trial, the result of which was a mean speed of 30·14 knots. The "Bat," the third of the new series of torpedo-boat destroyers built by Messrs. Palmer, of Jarrow, and delivered at Portsmouth, has also had a successful three hours' trial at Portsmouth. The mean speed for the entire run was 29·78 knots, but the mean of six runs over the measured mile was 30·053. The mean I.H.P. was 6,167, with 391 revolutions starboard and 400 port, and with 230 lbs. of steam pressure in the boilers and 3·3 inches of air pressure.

The Admiralty have completed the arrangements which have been in hand for the past two years for protecting the harbours on the south coast against torpedo attack in war-time. Besides the construction of immense booms, built of stout spars, chain cables, and wire hawsers, which will be laid across the harbour entrances, no fewer than thirteen obsolete sloops and gun-boats have been appropriated as boom defence vessels, which have been specially rigged and fitted for their new duties. Devonport Dockyard has been responsible for the fitting out of the "Mariner," "Reindeer," "Industry," "Fanny," "Mutine," and "Espiegle," and Chatham and Sheerness for the "Garnet," "Banterer," "Mistletoe,"

"Watchful," "Firm," "Grappler," and "Wrangler." All the vessels fitted out at Chatham and Sheerness will be utilised for the defence of the Medway. Of the six vessels fitted out at Devonport, the "Mariner" and "Reindeer" will be employed in the defence of Plymouth Sound, whilst the "Fanny" and "Industry" are to be sent to Portland, and the "Mutine" and "Espiegle" to Southampton. During peace-time the vessels will be taken charge of by pensioned petty officers. The gun-boats "Firefly" and "Bullfrog" will be similarly fitted out at Malta, to work with a defence boom which is being constructed for the protection of the war-ships in Malta harbour.

Messrs. Vickers, who lately purchased the Naval Construction and Armaments Company's Works at Barrow-in-Furness, have secured the contract for the new battle-ship of the "Canopus" class authorised to be constructed in a private establishment under the naval programme for 1897-98. The dimensions of the new vessel are:—Length, 390 feet; beam, 74 feet; width, 43 feet; and displacement 12,950 tons, on a mean draught of water of 27 feet 6 inches. The broadsides are to be protected by a 6-inch Harveyized armour, composed of an alloy of steel, nickel, and chromium. The armament will comprise four 12-inch 46-ton breech-loading weapons, mounted two in each barbette; twelve 6-inch 100-pounder Q.F. guns, mounted three on either broadside, two for direct fire ahead and two for direct fire astern; and twelve 12-pounder Q.F. guns, besides four submerged torpedo-tubes for the discharge of Whitehead torpedoes. In the design of the vessel, speed has been considered to be an important item, and engines of the triple-expansion type will be provided, to develop 13,500-H.P. when running at about 110 revolutions. The engines will drive twin-screws, and each set will have cylinders of 30 inches, 49 inches, and 80 inches diameter respectively, with a stroke of 51 inches. The boilers, twenty in number, will be of the Belleville type, with economisers, the total grate area of the boilers being 1,050 square feet, and the heating surface about 34,000 square feet. The new ship is to be called the "Vengeance."

According to the statement of the First Lord in Parliament, the other three new battle-ships, which are to be built at Portsmouth, Chatham, and Plymouth respectively, are to be "Majestics" of an improved type, bringing the number of that formidable class up to twelve. Their dimensions will be as follows:—Length, 400 feet (10 feet more than the "Majestic"); beam, 75 feet; mean draught, 26¾ feet (9 inches less than the "Majestic"); with a displacement of 14,900 tons; their mean speed with natural draught is to be 18 knots, or 1½ knots more than the "Majestic"; and they are to have an estimated continuous speed in smooth water, with clean bottoms, of 16½ knots. The ships will be fitted with water-tube boilers, the coal supply and bunker capacity being the same as in the "Majestic." Their armament is to be identical with that of the "Majestic," but new and powerful types of 12-inch and 6-inch guns will be provided, and improved mountings will be introduced. The hull armour, or citadel, will be of the same extent and thickness as in the "Majestic," but the quality of the armour will be superior. The armour is to be of nickel steel, and the quality is so superior that the protection, buoyancy, and stability of the vessel will be sensibly increased. A new feature in these ships is that before and abaft the citadel armour the sides will be protected by thin armour, as in the "Canopus" class. The protection of the barbettes containing the 12-inch guns and the protection of the 6-inch Q.F. guns will be equal to that of the "Majestic" class, and the arrangements for the stowage and transport of ammunition will resemble those of that class. The new light-draught river gun-boats are to consist of six vessels of 100 feet length, 2 feet draught, and a maximum speed of 9 knots; two vessels of about 145 feet length, 2 feet draught, steaming 13 knots; and four twin-screw river gun-boats of 180 feet length, 8 feet draught, and a maximum speed of 13½ knots. The general dimensions of the new Royal

yacht are to be:—Length between perpendiculars, 380 feet; beam, 50 feet; mean draught, with keel, 18 feet; displacement, about 4,600 tons. The hull will be of steel, with minute sub-division into numerous water-tight compartments, and a cellular double bottom as an additional security, and for the purpose of maintaining speed at sea for considerable periods the steel hull will be sheathed with teak planking covered with copper. The vessel will be propelled by twin screws, actuated by vertical triple-expansion engines, and the maximum speed on the contractors' eight hours' trial will be 20 knots. Four new armoured cruisers of quite a new type are also to be laid down, these vessels being in addition to the programme as already presented to Parliament; their dimensions being as follows:—The length between the perpendiculars about 440 feet; the extreme beam, 69½ feet; the mean draught with keel, 26 feet; and the displacement, 11,850 tons. Armament—two 9·2-inch guns and twelve 6-inch Q.F. guns, these being of a new and more powerful type; fourteen 12-pounder Q.F. guns, with a certain proportion of smaller Q.F. guns, and two submerged torpedo-tubes. The protection of the 9·2-inch and 6-inch Q.F. guns will be equal to that of the "Powerful" class, but the quality of the armour will be superior. Arrangements for the supply of ammunition will be similar to those in the "Powerful" and "Diadem" classes. Protection to the buoyancy and stability will be secured by vertical armour of the same thickness and quality as in the "Canopus" class of battle-ship. The protective decks will be similar to the "Canopus" class. The steel hulls will be wood-sheathed and coppered so that the vessel may keep the sea for long periods without serious loss of speed. The measured mile speed, with natural draught, on an eight hours' trial, will be about 21 knots. Water-tube boilers will be adopted, and the continuous sea speed in smooth water and with clean bottoms will be about 19½ knots. The coal bunker capacity will be about 1,600 tons, half of this being carried at the above-stated draught and displacement. All four ships are to be built under contract.

The Admiralty will pay in subsidies this year to the P. and O., Cunard, White Star Line, and Canadian Pacific Steamship Companies the sum of £48,600. The vessels thus subsidised, with the amount of subsidy for each, are as follows:—Cunard Company—"Campania" and "Lucania," £7,500 each; P. and O. Company—"Himalaya" and "Australia," £3,375 each, and the "Victoria" and "Arcadia" £2,438 each; White Star Line—"Teutonic," £7,265, and "Majestic," £7,396; whilst the Canadian Pacific Company will receive the collective sum of £7,313 for the "Empress of India," "Empress of China," and "Empress of Japan." In addition to these the companies engage to hold the following steamships at the disposition of the Admiralty without further subsidy:—Cunard Company—"Etruria," "Umbria," "Urania," and "Servia"; Peninsular and Oriental Company—"Britannia," "Oceana," "Peninsular," "Oriental," "Valetta," "Massilia," "Rome," "Carthage," "Ballarat," and "Paramatta." During the past few months considerable improvements have been made at the Naval Ordnance depôts in the character of the armament kept in reserve for these vessels, breach-loading guns having been substituted for muzzle-loaders, and Nordenfeldt and Gardner guns for the older types of machine guns. In the event of these cruisers being required for war service, they would each be furnished with 26 gunnery seamen from the naval depôts, in addition to their full complements of Royal Naval Reserve men.

An official abstract of returns showing the result of heavy gun practice—that is, guns from 16·25-inch down to 4-inch calibre—in the Navy in 1896 has been issued. Returns from the Channel and Training Squadrons are not included, as these ships, as well as the "Trafalgar," "Comus," and "Wild Swan," carried out ordinary target practice, the points gained for firing, together with points for rapidity, being scored for prize-firing; but, excluding these ships, the return gives

the results of the year's practice in 101 vessels. The muzzle-loaders may be easily dismissed, as only four ships so armed had any practice. The "Dreadnought" fired sixteen rounds from her 12·5-inch, and the "Inflexible" eight rounds from her 16-inch guns, but neither scored a hit; and the "Linnet," with ten rounds from her 7-inch guns, managed to hit the target only once. The "Alexandra," however, with nine rounds from her 10-inch guns, obtained three hits, a result that was at least equal to the average shooting throughout the year in the fleet. If we regard this result as exceptional, and conclude that muzzle-loaders cannot be relied upon for accuracy, it cannot be said that any better satisfaction is derived from the practice of the ponderous breech-loaders that superseded them, for both the "Benbow" and the "Sans Pareil" tried their 16·25-inch (111-ton) guns, the former firing seven and the latter six rounds, without once hitting the target. Fairly good results, however, were obtained from the 13·6-inch (67-ton) breech-loader, the average being more than 30 per cent. of hits. The following is the order of merit:—"Camperdown," 15 rounds, 6 hits; "Ramillies," 25 and 8 respectively; "Nile," 22 and 7; "Anson," 16 and 5; "Hood," 23 and 7; "Howe," 16 and 3. The only ship that practised with the 12-inch breech-loader was the "Colossus," which fired 17 rounds for one hit. Somewhat better results were obtained from the 10-inch gun, with which five ships were practised. Beginning at the bottom of the list, the "Sans Pareil," which was singularly unfortunate in all her practice, fired three rounds ineffectually; the "Thunderer" for 30 rounds made two hits; the "Centurion" hit the target three times out of 27 rounds; with 29 rounds the "Devastation" made four hits; while a more satisfactory achievement was attained by the "Barfleur," where 13 hits were recorded for 29 rounds, or 44·8 per cent. Eliminating the "Barfleur's" performance, the other four ships we have named return an average of a trifling fraction over 7½ per cent. of hits for rounds fired.

Much better results are arrived at in regard to the 9·2-inch and 8-inch breech-loaders, and here the "Impérieuse" stands out pre-eminently as furnishing the best shooting in the entire Navy for the year, as with her main armament she hit the target 22 times for 27 rounds; and, as will be seen hereafter, her practice with the 6-inch converted Q.F. guns was nearly as good. The extraordinary success of the "Impérieuse" will be seen when it is pointed out that the above result shows 81·5 per cent. of hits, whereas the next best result with any gun in the Navy was 67·2 per cent. Taking the other ships armed with the 9·2-inch or 8-inch gun (the two types being bracketed in the return) in the order of merit, the results may be briefly stated thus:—"Orlando," 16 rounds, 7 hits; "Narcissus," 14 and 6 respectively; "Edgar," 14 and 5; "Rupert," 12 and 4; "Alexandra," 29 and 9; "Galatea," 10 and 3; "Magdala" (8-inch), 29 and 6; "Royal Arthur," 11 and 2; "Warspite," 25 and 3; "Australia," 7 and 0. None of the twenty-three ships that practised with the 6-inch breech-loader returned an absolutely negative score, while six vessels obtained 40 per cent. or upwards of hits. The "Porpoise," for instance, hit the target 31 times in 46 rounds, giving a result of 67·3 per cent., which was slightly better than the next result from the Q.F. guns. The "Satellite" came next with 7 hits for 12 rounds, or 58·3 per cent.; the "Racoon" registered 18 hits for 39 rounds; the "Mohawk," 17 for 40; the "Anson," 19 for 45; and the "Dolphin," 4 for 10; while four other vessels made from 30 to 40 per cent. of hits. If we consider the comparatively limited number of rounds fired, and hence the limited character of the practice, these results are not only creditable, but, from a gunnery point of view, are worth comparing with the practice of more modern vessels of small displacement when we reach the 4·7-inch Q.F. guns. Nor is it without significance that, while the small ships we have mentioned obtained such good results, the "Australia" and "Rupert" can account for only 8 and 10 per cent. of hits respectively. If the ships that practised with the 5-inch and 4-inch breech-loaders did not attain a very high standard, they maintained a fairly even average, the worst record being 10 per cent., which was, however, obtained with

the expenditure of 70 rounds of ammunition. Twenty-eight ships practised with this weapon, and, while nine obtained more than 40 per cent. of hits, only five went below 20 per cent. The nine in order of merit are :—"Redpole," 26 hits for 49 rounds; "Peacock," 28 for 54; "Rattler," 20 for 43; "Firebrand," 13 for 29; "Partridge," 21 for 47; "Daphne," 32 for 75; "Royalist," 29 for 69; "Redbreast," 14 for 34; and "Thrush," 18 for 44. Five out of the nine best ships in this class were on the China station, where they had been stationed for some years.

When we come to the Q.F. guns we find a more liberal expenditure of ammunition, but without corresponding results. Taking the 6-inch Q.F. gun first, the "Sybille" fired 13 rounds with barren results; the "Cambrian" 11, the "Intrepid" 12, and the "Astræa" 14 rounds, for 1 hit each; while the "Æolus," with 15 rounds, made 8 hits. The greatest number of rounds (141) was fired by the "Royal Arthur," with 52·4 per cent. of successes; but the "Impérieuse," with 76 rounds, or little more than half the number, made 61·8 per cent. of hits. As twenty-one ships practised with the 6-inch Q.F., which is regarded as one of the best weapons in the Service, it may be interesting to note what ships fired more than 50 rounds during the year, with the percentage of hits. Next to the "Royal Arthur" the highest expenditure was by the "Crescent," where 105 rounds were fired with 42·8 per cent. of hits; "Hawke," 95 and 26·3; "Ramillies," 85 and 35·2; "Hood," 82 and 30·4; "Impérieuse," 76 and 61·8; "Edgar," 68 and 47·0; "Sans Pareil," 64 and 3·1; and "Nile," 59 and 16·9. Averaging the practice of the twenty-one ships that fired this gun, the result gives 1 hit for every 4 rounds; but, in spite of some remarkably bad scores, the practice of thirty-nine ships with the 4·7-inch Q.F. guns gives 29·7 per cent. of hits. The torpedo-gunboats that exceeded the average were the "Niger" (43·7 per cent.), "Leda" (40·9), "Salamander" (33·3), and "Gleaner" (31·5). On the other hand, the "Jason" fired 15 and the "Circe" 16 rounds without scoring. The "Gleaner" made 6 hits for 19 rounds; the "Hebe," 2 for 13; the "Seagull," 5 for 21; the "Sharpshooter," 1 for 17; the "Skipjack," 1 for 16; the "Onyx," 1 for 10; and the "Sheldrake," 3 for 16. The best results in this class of gun came from the Australia station, where the "Karrakatta" made 12 hits for 18 rounds (the top percentage of the year), the "Ringarooma" 41 for 74, and the "Katoomba" 30 for 74. Eighteen ships exceeded the average, which, being nearly half the number that practised with the 4·7-inch Q.F. guns, would not be unsatisfactory if the average were higher.

A trial was lately made at the artillery range of Sir W. Armstrong, Whitworth and Co., Silloth, of the Sims-Dudley powder pneumatic gun, which is said to be the only gun in existence by which high explosives can be fired by the use of gunpowder. This weapon, which was manufactured by the Sims-Dudley Defence Company, of New York, is of 2½-inch bore, and weighs 270 lbs., or with carriage 500 lbs. Its length is 10 feet, and from the muzzle to the end of the carriage 12 feet. Air pressure reaching to 6,000 lbs. to the square inch being produced by the explosion, no air-compressing plant is needed, and the gun is a self-contained, complete weapon. It consists of three tubes, arranged side by side on the same horizontal plane, the middle and longest tube being the main barrel from which the projectile is sent upon its journey. The other tubes are connected with each other and with the main tube. It is worked by two men, and the method of loading and firing being simple, six rounds may be fired per minute. The cylindrical projectile is of the same type as that used with a dynamite gun, and when charged weighs 11 lbs. In the main body of the projectile is placed a 4-lb. charge of explosive gelatine; in the front end a 6-oz. charge of dry gun-cotton, and in the gun-cotton is a cylindrical case containing 30 grains of fulminating mercury. The ignition is effected by a mechanical fuse, and when the shell strikes the water or any other object a steel

ball within it is driven forward, owing to the sudden retardation, and striking one or more percussion caps, causes a detonation, which ignites a tube of slow-burning powder, and this communicates with the fulminating mercury and so explodes successively the gun-cotton and the main explosive in the shell. The longest range at which the projectiles were thrown was about 1,750 yards. The explosions were very great when the projectiles fell, and it was afterwards ascertained that they had made holes 6 feet to 8 feet in diameter and 4 feet deep in the soft wet sand. The gun will be taken to France, to be tried by the French Government, and afterwards, at the request of the Sultan of Turkey, it will be tested in the Dardanelles.

Messrs. Vickers and Co. (Limited), had a most successful trial of a 4-inch special nickel steel armour plate on board the "Nettle" last month, under the direction of the officers of the Gunnery School at Portsmouth. The plate was 4 feet square, 4 inches thick, and had no wood backing behind. It was attacked by a 5-inch gun with Palliser projectiles. The first shot was fired with a velocity of 1,406 feet per second, but the plate showed no sign of having been hit. The 50-lb. projectile simply splashed on the face. The second shot was fired with a velocity of 1,750 feet per second, the plate being indented about three-quarters of an inch, but the face was not in any way broken. The third shot also had a velocity of 1,750 feet, but the indentation was only half an inch. There were no cracks of any kind in the plate, but the projectiles were in every case broken to fine pieces. Great satisfaction was expressed with this result, as the plate will prove invaluable where thin, unbacked armour is desired.—*Times* and *Naval and Military Record.*

The Naval Manœuvres call for no comment. In the case of the two opposing squadrons, under the command of Vice-Admiral Sir H. Stephenson and Rear-Admiral Fellowes, the result was practically a fiasco, neither squadron sighting each other. War was declared at midnight on July 7th, and concluded at 6 p.m. on July 11th. In the operations between the two divisions of the Reserve Squadron the duty of the First Division, under Vice-Admiral Domville, was to intercept the Second Division, under Rear-Admiral Pearson (representing the enemy), who was meditating a descent upon Berehaven or Falmouth. The defending force was at Milford Haven, when it put to sea to ascertain and frustrate the design of the enemy. The area of the manœuvres was within a circle of 220 miles radius from the Fastnet Rock, and was bounded on the North by the 52nd parallel of latitude. In the end Rear-Admiral Pearson attempted a descent on Falmouth, but it failed, as the defending force arrived off that port some five hours in advance of him. The scheme of the intended operations between the two divisions of the Channel fleet was given in last month's Notes, the intention of the Admiralty being that Admiral Stephenson's cruisers should have an opportunity of testing the French system of scouting known as the "curves of search"; but the "Blenheim," the cruiser left behind in Blacksod Bay to convey the news of the declaration of war to Rear-Admiral Fellowes at his rendezvous, slipped out of harbour in a fog and rejoined the main body of the squadron without once being sighted by one of Admiral Stephenson's scouts, which included amongst others the new cruisers "Powerful" and "Terrible." On receiving the news of war being declared from the "Blenheim," Rear-Admiral Fellowes then within 60 miles of his rendezvous, immediately turned about and regained Blacksod Bay, without sighting his opponent; he thereupon claimed the victory, but a telegram from the Admiralty ordered him to put to sea again and proceed the whole way to his appointed rendezvous and then return; but as this involved a complete change in the conditions, the original plan of operations was completely upset and the whole thing was turned into a farce. In view of the magnificent fleet of cruisers and torpedo-boat destroyers commissioned, it seems a pity that such a unique opportunity was not seized of carrying out operations which would

have involved scouting on a large scale, in which region of naval tactics there must surely yet be a good deal to learn.

FRANCE.—The following appointments and promotions have been made: Capitaines de Vaisseau—L. R. Saget de la Jonchère to "Le Borda"; F. A. A. Leygue to "Charles-Martel"; C. M. Richard d'Abnour to "Tage." Capitaines de Frégate—H. Noirot to Capitaine de Vaisseau; E. V. Goudot to command of Défense Mobile at Toulon.—*Moniteur de la Flotte.*

The new second-class cruiser "Du Chayla" is to be commissioned at Cherbourg with a reduced complement for her trials. The new first-class battle-ship "Masséna" has concluded her preliminary trials at Brest; with the engines developing 12,500-I.H.P., the mean speed obtained under natural draught was 16·8 knots; it is complained, however, that the ship threw up an enormous wave both at the bow and astern, which must have materially detracted from the speed; with reference to this, however, the *Yacht* points out that the waves in question and loss of speed were due to the trial trip having been made in shallow water, in addition to which the hull is presumably also foul, not having been painted for five months. The "Tempête," coast-defence ship appropriated to Bizerta, after leaving Brest for her destination was obliged to put in to Cadiz on account of the strong easterly winds; in consequence, the French papers hint that she is not a very efficient vessel. It is reported from Brest that the "Cyclops," Reserve depôt-ship, is to be paid off and dismantled, the workshops on board her being erected on shore, and placed under the orders of the Rear-Admiral Superintendent of the port. It is also stated that for the sake of economy certain vessels which are not likely to be required are to be placed in the second category of the Reserve with reduced complements. They are the "Tonnerre," "Onondaga," "Sfax," and "Fulminant." The "Tonnerre" and "Fulminant" are small battle-ships of 5,600 tons, launched in 1875 and 1877 respectively. The "Onondaga" is a coast-defence battle-ship of 2,592 tons, launched in 1863. The "Sfax" is a well-known cruiser of 4,488 tons, launched in 1884, and has been taking part in the manœuvres with the Northern Squadron before dismantling at Brest. The coast-defence battle-ship "Vengeur," 4,500 tons, two guns, mobilised with Reservists for the manœuvres, has had a successful twenty-four hours' trial at sea, and returned to Cherbourg.

On 18th August, M. Félix Faure, President of the Republic, will embark at Dunkirk on board the "Pothuau," which is to convey him to Cronstadt, to return the visit of the Tsar of Russia. The "Pothuau" will be escorted by the cruisers "Bruix" and "Surcouf." It is said that the President would have preferred using the "Dupuy-de-Lôme," in which he has already embarked on two occasions; but her draught of water was found to be too great, and it would have been very difficult, if not impossible, to navigate her to Cronstadt; so the "Pothuau," a vessel of lighter draught, was selected.

The following Naval credits have been passed by the French Chamber:—

New constructions	3,725,750	francs
Repair and maintenance of fleet	1,500,000	,,
Harbour works at Bizerta...	1,880,000	,,
Total	7,105,750	francs.

The Minister of Marine is authorised to commence, in addition to the vessels already approved, 2 armoured cruisers of 9,500 tons, 2 armoured cruisers of 7,500 tons, 4 torpedo-boat destroyers, and 9 coast-defence torpedo-boats of 85 tons.

The *Temps* remarks it is regrettable that only 3,725,750 francs have been voted for additional new constructions, instead of the 8,468,727 francs asked for

the same object in April last by the Minister of Marine; but more than six months of the financial year have passed, and it is probable both the dockyards and private builders could not now have utilised larger sums than those voted; it is not only, however, the credits asked for that have been modified. The original project of Vice-Admiral Besnard included the construction of a battle-ship of 12,000 tons, 2 cruisers of 7,500, 2 station cruisers of 2,500 tons, 4 torpedo-boat destroyers and 9 torpedo-boats; this list has been altered, the battle-ship and 20 station cruisers being erased, and instead of 18 vessels only 17 have been approved as given above. The necessity for more cruisers is due to the fact that the proportion of this class of vessel to the battle-ships is smaller in France than in other Navies, and the most pressing needs must be first supplied.

The 17 vessels will cost 82,626,120 francs, a somewhat larger sum than the 18 vessels in Vice-Admiral Besnard's proposal.

The designer of the two cruisers of 7,500 tons is M. Bertin, head of the technical branch of naval construction.

The bombardment of the battery erected on Titon Island by the "Marceau," which is fitted with the Engsche apparatus for communicating orders, was completely successful. The destruction was very great, the works being completely destroyed and three guns dismounted. The advantage of the new apparatus is, that it does away with any confusion in the conning-tower incidental to the employment of numerous voice tubes.—*Le Yacht* and *Le Temps*.

The following abridged translation of an interesting series of letters, entitled "Les Millions de la Marine," which appeared in the Paris *Temps* during the month of May, signed X., and resemble in outspokenness the articles under the heading of "The Truth About the Navy," which were published in one of our journals some few years ago, has been furnished by Commander D. Crofton, R.N.

X. would appear to be either a naval officer or some one well acquainted with the views of the French Navy, and now that the question of increasing the French fleet is before the public, these letters will be interesting as showing how the French Navy itself considers that the millions it is proposed to vote for its increase can be best applied.

It may be recalled that the Government proposal is briefly to spend 800,000,000 francs in a period of eight years, representing an increase of 200,000,000 in the ordinary votes on the same lapse of time.

I.

X. commences his first letter by saying that the announcement of such a considerable expenditure has not left the maritime world indifferent. The *personnel* of the fleet is aware of the duties that are expected of it and that its task will be easier if it is better provided with the means of performing them, nevertheless the Navy receives a new programme of construction with a certain amount of scepticism, for numberless have been the programmes unfulfilled, while the building results have not been proportional to the expenses incurred.

It cannot be doubted that the necessity has arisen for supplementary credits, the same demands coming from M. Lockroy (ex-Minister of Marine) and Vice-Admiral Besnard (present Minister), who, although they may be regarded as directly in opposition on all maritime questions, yet show unanimity on this subject, while all reports tend to confirm the statement that our present naval *matériel* is absolutely inadequate, and that it does not keep pace with our policy.

I have no intention of making any revelations regarding the actual condition of our naval forces, but certain incidents have received so much publicity that there can be no harm in referring to them.

It is notorious that not two years ago the flags of the commander-in-chief and the second-in-command of our Northern Squadron were hoisted in wooden-built

armour-clads at a time when such antiquated vessels had long since disappeared from every other Navy. It is well known that last autumn among the ships sent by all maritime nations to the Levant ours were the oldest and slowest. Everyone also is aware that about the same time the Ministry retarded the nomination of an officer to the command of the Reserve Squadron in the Mediterranean because the whole of our dockyards could not produce sufficient ships to form the minimum force which composes a vice-admiral's command. Also still more recently, when events in the East made it necessary for us to reinforce our division in the Levant, it is well known that the "Charles-Martel" received orders to leave Brest, after changing only 600 of the 1,400 boiler tubes which had been reported unfit for service, so that in fact to make up the number of ships required we were obliged to adjourn her repairs, also two torpedo-avisos required for the same duty had to delay their departure from Toulon on account of defective boilers, though they were supposed to be ready at forty-eight hours' notice.

If things are so with our home squadrons it is easy to imagine the condition of our ships on distant stations. The flag of the admiral in command in China floats on a wooden iron-clad, and the cruisers which accompany him are quite as much out of date if not more so.

To compare our fleet with that of England is absurd. England has prepared herself to meet the united Navies of the world; since 1880, counting only ships over 2,000 tons, she has launched 120 armour-clads or cruisers to oppose the 175 which the rest of Europe can assemble; but certainly we should strive to maintain our naval forces at sufficient strength to meet those of the Triple Alliance; the advantage was on our side for some years, but of late the equilibrium has been broken to our detriment, in the North by Germany and in the Mediterranean by Italy and Austria, who can put in line thirty battle-ships or cruisers of more than 2,000 tons each against the twenty-eight that we possess, while the Italian battle-ships have also all a speed of over 16 knots, so that our ships are not only inferior in number but inferior individually to those of our adversaries.

The supplementary credits asked from Parliament are, therefore, necessary and indispensable, if they are voted so much the better, and the Navy will be all the more pleased; but the question is, What shall we get for this magnificent sum of money, and will these millions be well administered or the reverse?

Our fears in this respect may be put down under the three following headings:—

1. The grave defects discovered in ships constructed of recent years have been far too many. If we continue to build ships wanting in stability, if we accept boilers which leak when under full pressure, if our guns are mounted in such a manner that they can only be fired in fine weather, the improvement produced in the fleet will be little or none, we may have more ships but they will be as bad as their predecessors.
3. The more homogeneous a fleet is the more controllable and efficient it is for manœuvring, the qualities of the best ships being annihilated by the defects of the bad ones. The English to assure homogeneity in their fleet only build altogether nine types of vessels, while we have twenty different kinds under construction. If we continue this system of *bric-à-brac* the millions will not give us good squadrons.
3. We are constructing as expensively as secondary Navies and the proportion of ships built to cost in France and England is as two to three, that is to say, that with the same sum England constructs three and we two ships. If this is continued it is clear that the millions will not give that increase to the fleet which should be expected.

What we wish, in fact, is, that this voting of millions for the Navy, this confession before the country of the inferiority of our fleet should be made the

occasion of a new departure, and that abuses a hundred times denounced by successive reporters of the budget should be swept away.

II.

I have already enumerated some of the most important defects in our new vessels, there are others and they are legion, but without attempting to give a complete list it is as well to mention here some of them.

The sensation caused by the report of the want of stability of the "Magenta will be remembered—it was the chief cause of the nomination of the extra-parliamentary "Commission de la Marine." This battle-ship, however, is one of the best in our fleet. Shortly after this the "Brennus" showed such defects on her trial that it was found necessary to modify her superstructure. It is common knowledge that four armoured coast-defence ships have had to be altered so as to permit them to fire their heavy guns, and that the hydraulic machinery for these same guns will not work when the vessel rolls more than 5°. Speaking generally as regards the boilers, one can almost say that there is not a single ship whose trials are accomplished regularly and satisfactorily, and the boiler tubes of the three battle-ships "Carnot," "Charles-Martel," and "Jauréguiberry" have had to be changed. The "Carnot" has in addition a more serious defect, for she has exceeded her estimated draught to such an extent that a small roll places the armour-belt below water. The cruiser "D'Assas" also has exceeded her designed draught, and in the "Descartes" the reverse is the case and ballast has had to be permanently placed on board, at the expense of her speed, to ensure her stability. Finally, the "Charles-Martel" recently struck the Mignon rock, in Brest roads, because her steering gear failed her at a critical moment, and in the "Jauréguiberry" extensive repairs have had to be undertaken on account of the bursting of a torpedo in a submarine tube.

Decidedly there are too many, far too many accidents, and how can this state of affairs be remedied?

Firstly, by not multiplying indefinitely the types of ships, as the more numerous they are the greater the chance of mistakes.

Secondly and chiefly, by organising responsibility. At present, capable or incapable, the officials who make these mistakes still continue their career—no one is punished. As responsibility in high places does not exist, it is no one's interest to make the subordinate officials responsible. We have no director of naval construction, no high official responsible to the Minister of Marine and the nation, and in consequence no one is interested in the success of a vessel, or in a position to punish or reward those who have supervised the work.

Parliament to fix responsibility ordered that the name of the constructor, author of each new design, should appear in the Estimates opposite that of the ship herself; but up to July, 1895, it must be said that the plans of our new ships had no real authors, for when a new design was proposed it had to be submitted to the "Conseil des Travaux," to the "Directeur du Matériel," and to the general staff of the Navy, and after going backwards and forwards between these offices and when all officialdom had had its say and made its suggestions, there generally remained little or nothing of the original plan, and the ship might have turned keel uppermost on first taking the water without its being possible to fix the responsibility on anyone.

Vice-Admiral Besnard endeavoured to remedy this state of affairs by creating, in 1895, what is called the "Section Technique des Constructions Navales," whose duty it is to prepare all new designs, but this did not establish a real responsibility; for though the "Section Technique" prepared the plans, they had no power of supervision over the carrying out of their designs which were put in the hands of the "Directeur du Matériel" for execution.

For real efficient responsibility both the elaboration and execution of a design should be in the same hands, that is, in the person of the "Directeur du Matériel," to whom the chief constructor of each dockyard should be responsible.

There is something humiliating in being forced to look abroad and take our model from strangers, but the wisest plan in this case is to copy and follow the example of the English, who place all responsibility on the shoulders of that eminent naval constructor M. White, who has acquired a universal celebrity and given to the English fleet that reputation which we might well wish for our own.

III.

I have said that we have twenty-three types of men-of-war under construction, and it would appear that the tactical formation of our naval forces requires not less than twenty-one different classes of ships, they are as follows:—

For our European squadrons we have armoured battle-ships, first-class, second-class, and third-class cruisers, torpedo-boat destroyers, and sea-going torpedo-boats, making six different types.

For coast defence, we have coast-defence battle-ships, first and second-class armoured gun-boats, first, second, and third-class torpedo-boats, and torpedo-avisos, seven other types.

For foreign service, armoured cruisers, flag-ship cruisers (croiseurs-amiraux), like the "D'Entrecasteaux," station cruisers of three different classes, station avisos, and gun-boats, seven more types.

Lastly, there are the commerce destroyers, of which we have two, the "Guichen" and "Château-Renault," which have great speed and enormous coal stowage.

This makes up the total of twenty-one types, a considerable luxury for a Navy like ours; but this extraordinary diversity is carried even further, for in each type there are such variations that one can almost say there are not two ships alike in our Navy. The Admiralty Council, of 1871, said, that "ships of new types must be laid down separately, and should not be reproduced till after long and conclusive trials in their favour."

This may be excellent in theory but in practice it is absurd, for as it generally takes five, six, or seven years to build a battle-ship and two years more would be required for conclusive trials, it follows that a particular type of ship could not be reproduced under eight or nine years, and in eight years a ship is out of date, the consequence being that our fleet is a sort of a museum of all sorts where it is the exception to find two vessels alike.

On the other side of the Channel, on the contrary, England, in the vessels she builds, restricts herself to nine different types of vessels, two kinds of battle-ships, two kinds of first-class cruisers, two kinds of second-class cruisers, one of third-class cruisers, and two of avisos.

If it is considered that each different type of ship demands special dispositions for its employment to advantage in action, and seriously increases the difficulties of the commander-in-chief; and if it be remembered that the radius of action and speed of a squadron are controlled by its least efficient ships, is it possible not to feel uneasy at the want of coherence in our fleet, or to avoid demanding that the supplementary credits be employed with more regard to uniformity.

It is not from a deficiency of programmes that our fleet suffers; on the contrary, we have had only too many, in twenty-six years there have been five, those of 1871, 1879, 1881, 1886, and 1891, but as each required ten years or so for its accomplishment none of them have been completed; add to this the frequent change of government and that it is not in human nature for one government to continue what its predecessors have commenced, and it will be easily understood how this strange fleet has been got together, where each ship is like an isolated thought unconnected with any general plan. Such is the French fleet of to-day.

With the exception of Admiral Aube and M. Barbey, two men who with different views have left their mark on the Navy, the divers ministers of marine have shown little zeal for new constructions, they have not even realised the minimum which, in 1891, was said to be obligatory:—"To maintain the same

numerical level in our fleet by building each year a number of ships equal to the mean of those which would have to disappear in the years to follow," for at this moment, from age, certain of our ships should be erased from the list of the fleet, and could not be replaced on account of the insufficiency of the number of new ships building.

It will be understood now that the mere voting of eighty millions is not sufficient to make our fleet what it should be, but that it is necessary in addition to be sure that the money is properly employed in carrying out a programme that will be faithfully executed. Unfortunately we do not find this assurance in the *projet de loi* of the present Minister of Marine. What we hoped for was a programme which both Parliament and Government would have formally engaged themselves to carry out, it would have been a sixth programme it is true, but one cannot believe that it would have shared the fate of its predecessors, for the situation is now well understood, and never has there been a more favourable moment for definitely fixing a programme with the concurrence of the Chamber.

IV.

The English Navy is said to be the cheapest as well as the most efficient, so it will be interesting to compare the cost of construction in England with the same in France.

In the 26 years, 1871-97, England has expended in ship-building and machinery 1,921,970,625 francs (£76,878,825) and France for the same purpose 1,044,873,670 francs (£41,794,946), (these figures are from Lord Brassey's "Naval Annual," M. Cockery's reports, and different parliamentary documents); what are the results obtained for these sums in the two countries? England has a force of 353 vessels, that is, 278 launched and 75 building, and France has 133, of which 110 are launched and 23 building; of course in these figures vessels of same size only are considered and small craft and torpedo-boats are left out.

If by a simple rule of three we now calculate the results for the two countries we find that to be proportionately equal to England the naval force of France should amount to 192 vessels.

But it may be fairly said that the ships being of different tonnage this comparison is of no value, as only similar things can be compared; nevertheless it is interesting to know that we might have had 59 more vessels for our money.

But let us now compare similar things—tons with tons. With her 1,922,000,000 francs England has acquired 1,475,970 ship-tons, and France with her 1,045,000,000 francs 643,717 tons. At the same rate of cost per ton as in England we should have had 802,405 tons, consequently by this comparison we are 150,000 tons short. This is what the vices of twenty-six years of bad organisation have cost us.

It is true that it may again be objected that for some time back a number of vessels have been struck off the lists of the fleets on both sides of the Channel, and that, therefore, the comparison is not an accurate one; this is so, but let us now take the results of the last seven years only. During this period England has spent 934,591,850 francs on new constructions including machinery, and has launched and completed 147 vessels having a total displacement of 501,670 tons, while France has expended for the same object 448,371,670 francs and has launched and completed 30 vessels displacing 147,906 tons. If France had built her ships under the same economical conditions as prevail in England, our production would have amounted to 70 vessels displacing 240,782 tons: we have, therefore, lost in seven years 92,876 tons, which represents a force nearly double as strong as our present Northern Squadron, the 14 ships of which have only a displacement of 50,000 tons.

The English Navy is not a special case, a comparison with the Navies of the Triple Alliance would give pretty nearly the same results. This is a distressing condition of things when it is remembered that our new programme will entail an expenditure of 800,000,000 in eight years. In England this sum would produce in round numbers 370,000 ship-tons, but with us, if no changes are made in our

methods of production, only 240,000 ship-tons; thus in these eight years we shall offer to our bad administration the prodigious holocaust of 130,000 ship-tons, representing a dozen or so large ships sufficient to provide four divisions of battle-ships.

The first step in the way of ameliorating this state of things is to provide that the Navy and the public know how the money is spent. It is possible to estimate *en bloc* the results of this wasteful expenditure during a period of years, but how this waste recurs in each particular ship built is what no one has yet been able to find out. It is a fact that the Government knew officially in 1891 that the shipbuilding estimates were exceeded by a little more than 30 per cent. In England since 1889 there has only been a difference of 5 per cent. between the estimated and actual cost of building, and with what loyalty and scrupulous care the real cost of each ship is given in the English Estimates, every item of expense is charged not only the direct cost of materials, but all the indirect expenses as well. There is nothing similar to this in the French Navy. Here, for instance, are two fleet cruisers of the same model, the "Du Chayla" built in the Government arsenal at Cherbourg, and the "D'Assas" built by a private firm at Saint-Nazaire; if one consults the shipbuilding vote it is seen that the first is reputed to have cost 7,694,665 francs, and the second 7,346,548 francs, say a difference of 350,000 francs, which would not be excessive if the figures represented the real cost, this however they do not do. In the price paid the private firm for the "D'Assas" everything—material, labour, and general expenses—is included; but in the case of the "Du Chayla" only the cost of materials and labour: the general expenses for direction, administration, machinery, tools, etc., are not included, but are inserted in some other place in the Estimates, if these were added it would be found that the difference in cost of the two vessels would no longer be as low as 350,000 francs, but that a million would more nearly represent the real excess cost of constructing a similar vessel in a government instead of in a private yard.

Even the cost of constructing vessels of the same type in different government yards is not the same but varies very much, the percentage of cost for administration in the different arsenals being as follows:—at Lorient 7 to 8 per cent. of the total, at Brest 11 per cent., at Cherbourg 17·4 per cent., and at Toulon and Rochefort 22 per cent.

Notice must be taken of these differences, we must take a hint from our neighbours in England; not only the cost of material and labour is included in the English Estimates, but every possible expense that has any connection is charged to the ship, not only salaries and the cost of administration, but the expenses of the police for guarding the workshops, and even those of religious services for the workmen, and it is only necessary to glance at the total to obtain the real cost, and not as with us, the fictitious cost, of each ship. What is possible for our neighbours should not be impossible for us.

V.

In establishing a comparison between the two Navies, the figures I have given might be contested; but after making every allowance, what cannot be denied is that enormous losses have taken place in the past, and, unless reforms are undertaken, are inevitable in the future. I have brought to light the fact that a battleship costs 25, 30, or 40 per cent. more in a French arsenal than one of the same tonnage built in England; also that of two cruisers of exactly the same type—one costs a million more, because built in a government yard, than the other built in a private yard; and in the face of these overwhelming proofs it is necessary for the administration of the Navy to search out the causes of these differences in cost.

The abuses which devour in useless expenses one-third of our new constructions are of many kinds. The transformation of dockyard workmen into employés (*fonctionnaires*), paid by the month, and with a pension to look forward to; the employment of the men on day work when piece work would be more economical; the purchase of materials by commissioners who are without responsibility for the

ultimate cost of the vessels—these are some causes of expense, but they are only secondary, and to remedy them would not reach the source of the evil. The real remedy which must be courageously faced is the specialisation of the ports.

If Germany and Italy can, with the same sum of money, produce more than France, it is because they are young maritime nations, and have been able to establish their arsenals with a view to the constructional requirements of modern ships. If England has been able with the same sum to produce more than one-third more than France, it is because, having formerly an organisation for the construction of sailing-ships, she had the energy in 1860 to withstand the resistance of private interests which lived upon this antiquated organisation, and to re-arrange from top to bottom the distribution of work in her arsenals and create an organisation suited to the new demands.

Our five military ports have to provide for work of two orders distinctly different, namely, the construction of ships and their fitting-out. A ship which is not completed at the outbreak of war can be of no value at the time; ordinary common sense, therefore, suggests that there is no advantage in exposing such ships to the fire of the enemy. With the old-fashioned artillery, all our ports offered a secure shelter to ships building; but against modern artillery Cherbourg is no longer safe, and can be bombarded from seaward; this does not, however, prevent its being continued as a ship-building dockyard by us, and a battle-ship was commenced there last year, which represents alone twenty millions.

There are two indispensable conditions for a good fitting-out port, the first being that it should form a good strategical base for all contemplated operations. Lorient and Rochefort were valuable as such when Spain was a Naval Power, but of what good are they to-day—are they useful as a base of operations against England or Germany? The second condition is that the accommodation offered by the port be such that a fleet may be able to put to sea ready for action at any time. Lorient is not accessible to large ships at low water, and Rochefort, properly speaking, is never accessible; but they were fitting-out ports in the days of sailing-ships, and so remain so, and thus we continue to keep up five military ports, administered and commanded as regards the high officials in a precisely similar manner as if nothing had changed.

To give an idea of the luxury in the *personnel* of our dockyards, which results from this system, it may be mentioned that with a fleet double the size of ours England maintains a staff of 72 naval constructors, while the French Navy requires 136.

Natural conditions, which cannot be altogether ignored, require that we should build in the ports most suitable for building, and fit out in those most suited for fitting out, so that one port may construct ships for 17 millions, and another for 5 millions; while one may fit out 50 ships in the year, and another but 6. Notwithstanding this, however, each has the same official establishment. Then there is what may be called the personal interest of the port; such a one has always been a building or a fitting-out port, and so in spite of all objections that common sense might raise, each must have its accustomed share, creating some of the causes most fruitful in useful expenditure. Here is an example:—

The plan of a ship when sanctioned is reproduced in the mould-loft full size, a long and costly operation; if two ships of the same type were built at the same port, this work would only require to be done once, but if one is built at Toulon and another at Brest, there is double the expense; and the same applies to many other matters, such as the moulds for special castings, special tools, etc. When a contractor has to deliver several things of the same nature he can afford to make a reduction in the price. Each new type of vessel has to be learnt by the workmen, and there is a corresponding loss of time; while, when two ships of the same type are successively under construction in the same yard, everything goes on much quicker. This has lately been shown at Brest, where the

"Gaulois" was only ten months building—such rapidity had never been seen before in our Navy, the reason being that the same workmen had previously constructed the "Charlemagne," a sister ship.

It may be thought that a lesson would have been learnt from all this—unfortunately, no; it happened that just at this time another ship of the same type was approved—the "Henri IV."; she was not, however, given to Brest, but to Cherbourg, where up to that time no large ships had been built, and where it has been necessary to construct a special building-slip, because the arsenal did not contain one large enough. A second battle-ship of the same model as the "Henri IV." has been approved this year; this vessel might now have been given to Cherbourg, but it is Brest this time that is to have the honour, though the moulds made for the "Charlemagne" and "Gaulois" at that port will be quite useless. The more practical English act differently; they have recently commenced a battle-ship in the arsenal at Devonport, where no large ships of this class have been built for some years, but the Estimates of 1897-98 provide now for the construction of a second battle-ship in the same yard, and thus the knowledge acquired by the workmen will be utilised again.

The more our ship-building is concentrated, the easier it will be to arrange the work so that the workmen may be employed to advantage; dispersed amongst five yards, this is impossible; and if changes are not made in this direction, there can be no hope that the credits to be voted for the new programme will be fully utilised.

VI.

My letters have touched on so many matters that, in conclusion, it may be as well to recall them.

Supplementary credits are certainly indispensable, and 200 millions for new construction will not be too much; but, nevertheless, it must not be thought that the present condition of our fleet is due to a want of money. The French Navy has not been starved; in twenty-six years more than half the sum expended in England has been spent, but only one-third of the results obtained in that country have been realised—this is the startling fact which, in future, should dominate all discussions on our Naval policy. If our squadrons, besides being weak in numbers, are also wanting in homogeneity, if the ships which comprise them have too many serious defects, these faults are due not to a want of money, but to vices in our organisation, which no amount of money will cure. In a word, it is not a question of money, but of employing the sums voted in a satisfactory manner. Millions may be thrown to the Navy by hundreds, but if changes are not made in their disbursement, our fleet will be like a leaky vase which cannot be filled.

The reforms necessary may be summed up as follows:—

1. To establish a real responsibility for all new constructions.
2. To rigorously carry out a well-considered programme, avoiding a multiplicity of types.
3. To suppress abuses in our arsenals. At present, where the English build three ships, we, with the same money, only build two. We must get to the bottom of this matter. It is not specially the government of the day that can be held responsible; all governments and all parliaments for the last twenty-five years must bear their share of blame. The present Minister of Marine should, therefore, have no hesitation in proposing the reforms. There are difficulties in the way caused by vested interests, but these must be boldly faced. It can easily be imagined that, when a reduction in the ranks of the higher officials is proposed, those who hold these appointments, or hope for them in the future, would not be human, if they did not oppose the measure with all their strength; and that, when it is proposed to specialise the ports, all that interferes with the routine of a certain port will be obnoxious to its officials.

These private interests which have thriven and increased for the last two centuries, and which are protected by the respect which naturally surrounds all established usages, make a formidable coalition, to overcome which a solemn accord between Government and Parliament is necessary. The time and occasion have come, and if the Government takes the initiative, it will be well supported; for no question for the last twenty years has so pre-occupied Parliament as this question of the Navy.

UNITED STATES.—Experiments which the Bureau of Ordnance of the Navy have been making at the Indian Head Proving Grounds with a shell intended to permit the use of high explosives in ordinary guns came to a somewhat disastrous end on Wednesday, June 1st, by the bursting of the shell in the gun, which in turn was torn to pieces with a tremendous explosion. The witnesses of the trial escaped unharmed, though pieces of the burst gun and shell fell around the tug upon which the ordnance officers were watching the test. The officer who discharged the gun escaped only because he had sheltered himself behind an embankment instead of resorting to the usual corner of the bomb-proof, where the force of the explosion was so great that it collapsed a small wooden building used to shelter the instruments. The shell was a Gathmann projectile, loaded with over 300 lbs. of gun-cotton, and it is supposed that it was made to withstand the shock of the explosion of the powder charge in the gun, which in this case was much less than usual, the pressure being about 3 tons instead of 15 tons to the square inch. The gun destroyed was a jacketed tube, intended for a 13-inch gun, but so far only bored out as a 12-inch tube. The ordnance officers have never been satisfied as to the possibility of using gun-cotton in this way, but made the experiment by direction of Congress, which set aside an appropriation for the purpose. The value of the property destroyed was about $25,000. The Navy Department has since received a report from Commander A. R. Conden, Inspector-in-Charge at the Indian Head Proving Grounds, concerning the damage sustained by the recent premature explosion of a Gathmann projectile in the 13-inch gun tube calibred to 12 inches. Had the accident occurred on ship-board the vessel would undoubtedly have been destroyed. The report says that the gun was a 12-inch experimental one made at the gun factory. It consisted essentially of a 13-inch breech-loading rifle tube with a chamber sufficiently large to accommodate a Gathmann 12-inch shell. The gun was secured to the saddle of the 12-inch station hydraulic mount by two heavy composition bands. The shell weighed 950 lbs. and was loaded with 307 lbs. of wet gun-cotton. The charge consisted of 394 lbs. of brown powder. Commander Conden thus describes the result of the explosion:—

"It was found that all of the gun in the rear of the forward strap was blown off and to pieces. A crack was made the whole length of the remaining portion of the gun to within 5½ feet of the muzzle. Pieces of the gun and projectile flew far and wide, some pieces passing beyond the tug stationed a mile down the river with ordnance experts on board, and some falling between the tug and the shore. One piece, possibly a portion of the shell, was seen to strike the water in the direction in which the gun was pointed and perhaps three-quarters of a mile from the gun. The breech block housing was cracked through, and it opened out so that the plug nearly cleared the threads. Twelve large pieces of the gun were found weighing from 250 to 300 lbs. The total number of pieces picked up was thirty-one, the weight of the smallest being 30 lbs. The asbestos pad was crushed to half of its original thickness. The amount of pressure registered in the barrel of the gun was 28·1 tons.

"The only thing uninjured about the mount was the piston. The timbers in the rear of the 13-inch pit were badly cut up. A 6-inch Holtzer armour-piercing projectile had its cap and point broken off, and these were picked up about 400 feet from the gun, having evidently been struck by a flying piece of the gun. A

6-inch Carpenter shell also had its cap and point broken off. A plate three-quarters of an inch in thickness and 4 feet by 7 feet, lying flat on the ground, was lifted up and driven end on into the ground in a vertical position. The breech block and housing were blown against the embankment to the rear of the gun and demolished about 12 feet of the upper part of the brick wall. A powder car standing on the tracks near by was wrecked and some damage was done to the woodwork of the gun platform and railroad tracks. In addition, the bomb-proof was damaged and several delicate instruments badly injured."

Captain Purnell F. Harrington, U.S.N., commanding the monitor "Terror," senior member of the Board appointed to examine the pneumatic system for working the turrets and guns, steering and refrigerating upon that vessel, has submitted a report to the Department, which is of a more favourable tenour than many naval officials expected would be made. Captain Harrington states the advantages of the pneumatic system as follows:—"Whenever an air-compressing engine is installed, the power desired for any purpose may be obtained in excess of any steam pressure available. Air-power motors may be substituted outside of the main engine-room everywhere below decks instead of steam engines, such as steering engines, anchor and hoisting engines. Those parts of the ship would then have an agreeable temperature instead of being uncomfortably and hurtfully heated by the presence of steam-pipes. Air leaks and broken air-pipes impose no danger whatever, while steam leaks and broken steam-pipes, particularly in action, are dangerous and alarming. Air leaks are quickly found and stopped, and they give no increase of temperature or flood of water or any personal inconvenience to those in the compartment. There is immunity from freezing pipes. Air motors require no special exhaust pipes, but the exhaust may be turned into the air, or used for the ventilation of the compartment. Air motors may be started or stopped suddenly with little danger of injury to the motors. Compressed air is always ready for work, without freeing the pipes preparatory to starting motors. The system is, in operation, as witnessed by the Board, clean and free from danger and inconvenience, and free from difficulties in ascertaining or removing causes of trouble, which freedom is not inherent in any other system of turret and steering machinery. While the Board is pleased with the pneumatic machinery on board the 'Terror,' it recognises the fact that it is an experimental design. The Board is of the opinion that a new design would produce results even more satisfactory than those on board the 'Terror.'"

The examination of the pneumatic system covered a period of five months, and the Board describes as "excellent" the behaviour of the turrets, guns, and steering gear. It has been repeatedly demonstrated that when the ship is at a speed of from 6 to 8 knots, and there is a pressure in the steering cylinders of 125 lbs. per square inch, the helm can be moved by the air piston from hard over one side to hard over the other side (68°) in seven seconds. The only criticism made by the Board relates the air-compressing engines. These, it declares, are of obsolete type, and run at low speed, and a recommendation is made that they be replaced by compressors of recent design which run at high speed.

With a view to making recommendations for increasing the efficiency of the Navy, both from a tactical and an ordnance point of view, the Secretary assembled at the Navy Department lately a Board, consisting of Rear-Admiral Montgomery Sicard, Commander-in-Chief of the North Atlantic Squadron; Commodore A. S. Crowninshield, Chief of the Bureau of Navigation; Commander Charles O'Neil, Chief of the Bureau of Ordnance; and Commander C. F. Goodrich, President of the Naval War College. The matters under consideration included the arrangement of a programme of manœuvres for the North Atlantic Squadron commencing in August, and a proposition for converting 3 and 6-inch guns now on board vessels in the Service into Q.F. guns. Lieutenant-Commander W. W. Nimball was afterwards added to the Board, and the character of manœuvres for the proposed torpedo-boat flotilla was considered.

The programme of manœuvres under consideration was prepared solely for execution by the battle-ships and armoured cruisers of the North Atlantic Squadron. It is possible that some of the smaller cruisers may participate in the exercises later in the year. The manœuvring squadron, however, will be the first composed of battle-ships which has ever been formed in our Service for the purpose of tactical drill. This squadron will be required to carry out a programme involving at least three months of work. The exercises carried out by the squadron under Rear-Admiral Bunce last year were very good in some respects, but their value was impaired by the fact that too many different types of vessels participated. Beginning in August, it is proposed to have in line, under command of Rear-Admiral Sicard, the first-class battle-ships "Iowa," "Massachusetts," and "Indiana," second-class battle-ships "Maine" and "Texas," and the armoured cruisers "New York" and "Brooklyn." All of these are of the armoured class, which would, in an encounter with a hostile force, form the line of battle. It is proposed by the Department to give the officers attached to these ships a thorough drill, so that they be fully qualified to handle the vessels in case of war.

It is expected that the fleet will manœuvre in New England waters, so that officers undergoing a course of instruction at the Naval War College may witness the exercises and profit thereby.

There has been some talk of forming two squadrons later in the year, one of which should be designated as an enemy, and the other a fleet to protect a harbour of the Atlantic coast. Such a manœuvre will not be attempted during August or September, but it is possible that something of the kind may occur later in the year.

Commander O'Neil urged upon the Board that all of the 5 and 6-inch guns now in service be converted. The Ordnance Bureau recently began the conversion of 6-inch guns of the "Atlanta" and "Chicago" into Q.F. guns, and the Department is now desirous of extending this policy to other vessels equipped with the same type of guns of this and the 5-inch calibre. The question involved was whether such conversion should be made or whether it would not be wiser to get new guns. The Board will make a recommendation on this point. The Navy Department has under consideration a programme of manœuvres for the torpedo-boat flotilla, contemplating the execution of exercises similar to those which would obtain under war conditions. The flotilla will have no connection whatever with the squadron composed of battle-ships. It will proceed from port to port, sometimes cruising at sea and at other times making the passage through canals, and will enter interior rivers. It will be kept at sea from twenty-four to forty-eight hours, in order that the officials may learn what to expect from torpedo-boats in heavy weather. They will drill together night and day, and in some cases under the supposition that a hostile force is operating outside of the harbour in which they may be exercising at the time. The Department hopes to learn by the carrying out of such a programme the best methods for torpedo-boat attack, whether the most desirable results can be obtained in operating against a battle-ship attached to an enemy's squadron by a torpedo-boat acting singly or by several torpedo-boats acting in conjunction.—*Army and Navy Journal*

MILITARY NOTES.

PRINCIPAL APPOINTMENTS AND PROMOTIONS DURING JULY, 1897.

General T. C. Lyons, C.B., to be Colonel Princess Victoria's (Royal Irish Fusiliers); Surgeon-Major General W. R. Rice, C.S.I., M.D., to be Hon. Physician to the Queen; Major-General H. Trotter, late Grenadier Guards, to command the troops in the Home District. Colonels C. J. Moysey, C.M.G., half-pay, and G. Salis-Schwabe (temp. Major-General), commanding the troops, Mauritius, to be Major-Generals. Colonel W. F. M. Hutchinson, half-pay, to be D.A.G. for Royal Artillery at Head Quarters, with the temporary rank of Major-General; Colonel (temp. Major-General) F. T. Lloyd, C.B., from D.A.G. Royal Artillery at Head Quarters, to be Governor and Commandant, Royal Military Academy, Woolwich, with the temporary rank of Major-General; Colonel (temp. Brigadier-General) T. B. Tyler, to be Inspector-General of Artillery in India, with the temporary rank of Major-General; Colonel H. Creagh, half-pay, to be A.A.G. Netley; Brevet-Colonel G. M. Fox, half-pay, to be A.A.G. North-Eastern District; Colonel E. R. P. Woodgate, C.B., *p.s.c.*, to command the 4th Regimental District.

MARCH OF THE 2ND BN. THE SOUTH WALES BORDERERS FROM NEWPORT, MONMOUTH, VIÂ BRECON TO PEMBROKE DOCK.

The daily routine, which was strictly carried out, was as follows. The battalion was never late in moving off. Sometimes, towards the latter part of the journey as the men got accustomed to the routine, the battalion marched off at 6.45 a.m.:—

5. 0	a.m.	Reveille.
5.30	,,	Rations, blankets rolled and packed in waggons.
5.45	,,	Breakfasts.
6.20	,,	Tents struck and packed in waggons.
6.30	,,	Orderly room duties. Inspection of sick.
6.45	,,	Cooks' waggon to leave camp.
7. 0	,,	Battalion to fall in.
12	noon.	Dinners.
1.30	p.m.	Inspection of feet, rifles, and accoutrements. The men allowed out of camp immediately after this parade.
5. 0	,,	Retreat.
9. 0	,,	Tattoo. Last post.

Itinerary:—

July 9th. The battalion arrived at Newport, where two companies at once went into barracks, and remained on detachment. The remainder consisting of 16 officers, 29 warrant and non-commissioned officers, and 442 privates were placed under canvas.

July 10th. Marched through Newport town in drill order with helmets.

July 11th. Attended open-air divine service with local Volunteers at the Newport Athletic Club Field.

July 12th.	Marched to Pontypool	12 miles.
July 13th.	Marched to Brynmawr	11 ,,
July 14th.	Route march to Nantygle, Ebbw-vale, and Tredegar ...	13 ,,
July 15th.	March to Glanusk	9 ,,

July 16th.	Marched to Brecon	11 miles.
July 17th.	Route march through Brecon.	
July 18th.	Divine service with Depôt Companies at the Priory Church.	
July 19th.	Marched to Sennybridge	10 ,,
July 20th.	Marched to Llandovery	13½ ,,
	Here the South Wales Borderers Regimental District ended and that of the Welsh Regiment commenced.	
July 21st.	Marched to Llandilo	12 ,,
July 22nd.	Marched to Carmarthen	16 ,,
July 23rd.	Marched to St. Clears	8 ,,
July 24th.	Marched to Narberth	14 ,,
July 25th.	Attended divine service at Narberth Church.	
July 26th.	Marched to Tenby	10 ,,
	One company proceeded to occupy barracks at Pinally on 27th, where it remains on detachment.	
July 27th.	March to Pembroke Dock	12½ ,,
	Total	152 ,,

The above distances do not represent the actual distance between the two towns at which the battalion encamped The route was somewhat altered to enable a visit to be made to towns and villages adjacent to the line of march.

Halts.—The usual halts were observed of five minutes after the first half hour and ten minutes every hour afterwards. These halts were independent of the halts made when the men were entertained half way on their march. The latter halts averaged three-quarters of an hour.

Weather.—The heat was almost tropical and dust very thick for the first part of the march, *i.e.*, until Sennybridge. From this place it became ideal marching weather. Heavy rain fell while striking camp at Sennybridge and during the first three miles of the march from that place.

Kit.—The kit carried was the Slade-Wallace, marching order without entrenching tools. No difficulty was experienced in carrying it. The regulation leggings, however, failed to give satisfaction, as they chafed the heels considerably, especially when going down hill. The result of wearing them for any length of time unsupported except at the bottoms where they join the boot, is that they slip down over the boot, gradually pressing more and more on that part of it just above the heel, wearing out that portion of the boot and the gaiters themselves. Knee-breeches with leggings suspended from them, as worn by ordinary country gentlemen, would doubtless obviate this.

Strength.—The battalion marched from Newport as under:—

Officers	16
Warrant Officers and N.C. Officers...	29
Privates	442

Sick.—Six men were sent by rail, suffering from venereal disease, viz., four from Newport and two from Pontypool. No other case of sickness occurred during the march, but some thirty men were treated for sore feet and blistered heels. No men fell out on the march, but a few, not exceeding four per diem, with sore feet, were carried for a day to give their feet a rest; these marched the following day in all cases. As the weather got cooler and the feet hardened, the cases of blistered feet decreased; and no men were in the ambulance the last two marches. Fifteen men were excused wearing leggings by the medical officer: this speaks for itself.

Band.—The band and drummers carried no valises, and either one or the other played almost continuously while on the march from Newport to Pembroke Dock. On the march to Brynmawr fifteen men suffered from sore lips, due to heat

and dust; these soon recovered. In addition to the march, the band played a selection in camp or elsewhere daily.

Behaviour of the Men.—The behaviour of the men was most excellent. No case was brought to notice of any man disgracing his regiment on the march, and the local police authorities were loud in their praises of the conduct of the men.

Reception.—The reception given to the battalion was most enthusiastic. In nearly every village or town through which it passed bunting was displayed, arches with mottoes, the victories of the regiment, or appropriate welcomes were erected. Large numbers of people flocked from the neighbourhood to see the regiment pass through, and crowds visited the camp, enquiring into, and noting, each detail connected with it. The officers, non-commissioned officers, and men were everywhere most hospitably entertained, the hospitality of the local Volunteers being conspicuous. Entertainments were also provided at nearly every halting place.

No intoxicants were allowed to be given to the men until the camp was pitched and dinners ready, but mineral waters were supplied instead. No difference was made in the reception accorded to the battalion by the towns and villages of its own district and that of the Welsh Regiment (the 41st Regimental District). The local Volunteers in many instances turned out and formed guards of honour, and the local Volunteer bands played the regiment into their towns.

Recruits.—The number of recruits obtained during the march is as follows:—

In 24th Regimental District finally approved—	
For Militia	42
For Line Battalion	11
For Royal Artillery	1
In 41st Regimental District finally approved—	
For Militia	2
For Line Battalion	2
For the South Wales Borderers	2

Many enlisted for the Militia will join the Line after their forty-two days' training is over.

General Remarks.—Every encouragement was given to the inhabitants to inspect the camp and see all that was going on. This was taken the fullest advantage of. At 9 p.m. each day the camp was cleared, and it speaks volumes for the behaviour of the crowd, often many thousands strong, that they left, when asked, in an orderly manner and in perfectly good humour. It is hoped that the march will in a great measure prove to the people of Wales, especially those living in out of the way parts, that the life of a soldier is a happy one, and that he is not the degraded wretch that many of those who are unacquainted with him imagine him to be. It is also to be hoped that the Nonconformist ministers who do their utmost to discourage young men from enlisting, may, by the behaviour of the soldiers on this march, be encouraged to look on the Army more in the nature of a good training ground for young men, especially those who are inclined to give trouble in their own parishes. A word of praise is due to the Church of England clergy, who, one and all, showed the greatest enthusiasm, and in many cases ably conducted the receptions and entertainments given to the battalion.

Trade is at the present uncommonly good in the district traversed by the battalion, but should it slacken, no doubt it will derive the utmost advantage in a recruiting sense from the march through a most lovely and interesting country.

MARCH OF THE 4TH BN. THE LANCASHIRE FUSILIERS

FROM ALTCAR TO BURY, IN LANCASHIRE.

The first attempt at giving a Militia battalion the advantage of marching through its county on the completion of its annual training was initiated in 1896 in the 4th Bn. Royal Warwickshire Regiment, commanded by Colonel J.

Gildea. Several battalions were ordered to practise it in 1897, but it is regretted that some of them were excused on remonstrances being made by commanding officers that it might injuriously affect recruiting. In the 4th Bn. Lancashire Fusiliers, however, the order was carried into effect.

Itinerary.—July 21st, Altcar to Ormskirk, 9 a.m. to 1.45 p.m. ... 13 miles.
July 22nd, Ormskirk to Wigan, 8.30 a.m. to 3.15 p.m. 17 ,,
July 23rd, Wigan to Bolton, 8.30 a.m. to 1 p.m. ... 12 ,,
July 24th, Bolton to Bury, 7 a.m. to 8.30 a.m. ... ... 5 ,,
Total ... ... 47 ,,

Halts.—The usual halts were observed.

Road.—In most cases very bad, with steep gradients, either paved with cobbles or lined with stone sets.

Weather.—Extremely hot and dusty.

Kit.—The men were in marching order and carried valises.

Strength.—640 of all ranks.

Sick.—One man was sent to infirmary, the remainder of the sick were treated in camp for blistered feet, and in nearly every case resumed the march on the following morning. Four men fell out on the first day, but, after being medically treated in camp, resumed the march on the following. On the second day, which was unusually trying, twelve men fell out; on the third day three men; and on the last, all but one man marched with the battalion into Bury.

Behaviour of the Men.—The men behaved extremely well, and gave no trouble whatever.

Reception.—The upper and middle classes, those who from their position and presence might have favourably influenced recruiting for the Militia, were conspicuous by their absence.

General Remarks.—The lower classes were evidently much interested in the battalion, and the camps were thronged with people curious to see the life of a soldier under canvas. The battalion suffered in estimation from the want of a full head-dress and smart clothing, and from the want of a band. When the march did not exceed 10 miles the men appeared to enjoy it; but when distances of 17 miles in a burning sun had to be covered, over very bad ground, the men carrying heavy valises, having no proper covering for the head, and denied the enlivening accompaniment of a band, it was not to be expected that the effect on recruiting would be favourable. That the Militia has declined in popularity, in consequence of official neglect, was very noticeable on this march.

In striking contrast to the reception accorded to a Line battalion, the 2nd Bn. South Wales Borderers, which marched through Wales, the 4th Lancashire Fusiliers were entirely ignored by all but the poorer classes. The march was advertised, but no reception or welcome of any kind was accorded them, and although two of the places where the camp was pitched contained the headquarters of Volunteer battalions, neither of their bands was sent to meet the Militia battalion. From the point of view of efficiency the march was very successful. The men showed that they could march; they learned a great deal in the matter of pitching and striking camps, and in packing and unloading. And were the marches limited to 10 miles, and were proper head-dresses and clothing supplied to the Militia, no more profitable mode of concluding an annual training than a march home through the county can be devised.

It was extraordinary that no medical officer accompanied the column.

At the distribution of prizes at the recent All-Ireland Rifle Meeting at the Curragh, Field-Marshal Lord Roberts made the following important remarks on the subject of rifle shooting:—"When I first entered the Army, with the exception of a few scattered skirmishers, opposing lines had to approach to within

some 80 yards of each other before they could open fire with any chance of hitting one another. There was then much to be urged in support of the theory that marksmanship was but a small matter in comparison with drill. As frequently happens, however, in our conservative Army, this theory long outlived the conditions which had given it birth, and, as lately as twenty years ago, there were many commanding officers who looked upon target practice as an unnecessary nuisance, forced upon them by the authorities to the detriment of drill, and, therefore, of service efficiency. The experience gained in the wars of recent years showed so clearly the fallacy of this theory that the value of good shooting has been more frankly acknowledged by us than, perhaps, by any other Army. Notwithstanding, however, this experience, and the constant flow of officers into regiments with certificates from Hythe and other schools of musketry, the theory that musketry was in some way antagonistic to, or, at any rate, quite apart from, drill and efficiency, survived until a very short time ago. Indeed, I am not quite sure that it is altogether extinct even now. My own opinions on this most important question were embodied in the Musketry Regulations for native troops, which were published when I was Commander-in-Chief in India, and I can at all events claim for them that they have stood the test of time, for I find that, in the latest edition, my Regulations are practically unaltered, and the excellent shooting of the majority of the native regiments, especially as regards section volleys at moving or disappearing targets, is probably well known to all soldiers who have recently served in India. The general principle I have always kept in view is, not only that drill and discipline can and should help musketry, but that musketry, when properly conducted, can and should help drill and discipline. I am now speaking of peace-range musketry and barrack-square drill, but I firmly believe that, under service conditions, while drill and discipline are essential to good shooting, the act of shooting itself may be so carried out as to sustain morale and discipline far beyond the stage at which they would otherwise tend to give way. In fact, and I speak from what I have seen, not only ammunition but also discipline itself is apt to melt away very rapidly under the pernicious influence of unrestrained firing. Whereas, when backed by the continuous assertion of authority, as laid down in the Regulations collective fire, morale and steadiness will stand the severest strain, and—a very important point—there is infinitely less chance of the pouches being prematurely emptied. It is sometimes urged that, on the field of battle, when the 700 or 600 yards range is reached it would be scarcely possible to prevent men firing individually and indiscriminately, and that it would, therefore, be better to train our soldiers to always fire individually than by volleys. This view does not commend itself to me. Once launched to the attack men will no doubt get out of hand occasionally, but if they have been carefully trained it should not be difficult to pull them together, and if this can be done sufficiently to enable them to fire even one volley it will give them a new lease of courage and steadiness. I hope you will understand that, while strongly advocating the necessity for paying attention to collective fire, I consider that perfect individual shooting is most important; for is it not evident that if a section is to fire good volleys the units composing it must be good individual shots? As a matter fact, the successful individual marksman, combining as he does eye, nerve, patience, and judgment, is a person who commands my highest admiration. All I wish to emphasise on the present occasion is that, in my opinion, good rapid volleys, under the control of a practised commander, constitute the very essence of military shooting, and that it is by meetings such as this that we look to produce the fine individual shots who may some day be available either to command fire units themselves, or to place their hardly-acquired skill unreservedly at the disposal of experienced section leaders. Though I feel that I have detained you too long already, I would like before we part to illustrate the advantages of a happy combination of drill, discipline, and musketry, such as I think necessary for the

training of a soldier, by telling you what happened a few weeks ago on the North-West Frontier of India. Most of you no doubt read in the papers of the treacherous attack made by the tribesmen of the Tochi Valley on one of our Political Officers and his escort, which consisted of 12 sabres, 2 guns, and 300 infantry. But you have probably not been told of the splendid behaviour of this small force under most trying conditions, where their courage and discipline were put to an extremely severe test. With the exception of six British officers, the troops were all natives belonging to the Punjaub Frontier Force. Within the first few minutes of the attack three of these officers were killed, and the other three were so badly wounded that they were useless as leaders. The country was most difficult, and all to the advantage of the enemy, who knew every inch of the ground, which was nothing but a mass of rocky ridges. But our brave native soldiers, under the guidance of their native officers, putting in practice what had been instilled into them by their training in time of peace, were able to retire in perfect order for three whole miles, taking up position after position, and keeping the enemy at bay by their volley firing, until they reached a place where they determined to make a stand until reinforcements could arrive. The reinforcements consisted of two companies of the 1st Sikhs, under the command of Lieutenant H. de Brett, of the Royal Artillery, who prudently brought with them spare ammunition for guns and rifles. So great was their eagerness to reach their hard-pressed comrades, that they covered a distance of nine miles in one-and-a-half hours, although each man carried a rifle and seventy rounds of ammunition. You soldiers can appreciate what that means under a burning sun and over rough stony ground. The discipline and musketry training must have been perfect which enabled men to accomplish such a feat as the retirement without hurry or confusion, and, while carefully husbanding their ammunition, to fire volleys with such good effect that considerable numbers of the enemy were reported to have been killed. The escort itself had twenty-three killed and thirty wounded."

In the official remarks which have been issued on the Evelyn Wood Competition, which recently took place at Bisley, it is stated that "the march was in every instance well timed, and the teams arrived fresh and within the allotted time, with only two casualties. The percentage of hits to rounds fired was considerably better than last year; the highest percentage (51) being obtained by A Company, 2nd Royal West Surrey Regiment. It was observed, however, that several teams lost points for fire discipline. In many instances the range was over-estimated, and captains of team and section commanders did not pay sufficient attention to observation of fire, with the result that the greater part of the ammunition allowed was expended before the error in the elevation used was detected."

In regard to the manœuvres to be held in the Aldershot District, the two field columns formed of Regular troops in the command leave Aldershot on the 16th August, after having participated in the important field operations which took place between the 26th ult. and the 6th inst. They were exercised in route marching once a week in the early morning; and on 1st August the last issue of boots were taken into wear and dubbin ordered to be freely used on all parades and duties. The organisation of the two columns is as follows:—

No. 1 Field Column: Commanding, Major-General H. M. Bengough, C.B., (commanding 1st Infantry Brigade). Cavalry, one squadron 15th Hussars. Royal Artillery, 56th and 62nd Field Batteries. Royal Engineers, half 23rd (Field) Company and a section of 1st Telegraph Battalion. Infantry, 2nd Liverpool Regiment, 2nd Devonshire Regiment, 1st King's Own Scottish Borderers, 1st South Staffordshire Regiment, 2nd Royal Berkshire Regiment, 3rd King's Royal Rifle Corps. Detachments, Army Service Corps, Medical Staff Corps, and Military Police.

No. 2 Field Column: Commanding, Major-General W. O. Barnard (commanding 2nd Infantry Brigade). Cavalry, one squadron 15th Hussars. Royal Artillery, 12th, 18th, and 66th Field Batteries. Royal Engineers, half 23rd (Field) Company and a Section of 1st Telegraph Battalion. Infantry, 2nd Royal West Surrey Regiment, 2nd Lincolnshire Regiment, 2nd Somersetshire Light Infantry, 2nd Loyal North Lancashire Regiment, 1st Royal Dublin Fusiliers. Detachments, Army Service Corps, Medical Staff Corps, and Military Police.

There will also be a detached force which will be at Aldershot, and sent out daily on one or other side. Nominally it will consist of a battery of Royal Horse Artillery and a squadron of cavalry, but the other troops of the Division which are not included in either of the field columns, and a brigade of Militia, which will at the time of the manœuvres be undergoing training at Aldershot, are "warned" to be in readiness to join the detached force. Major-General Sir J. Alleyne, K.C.B., R.A., will act as Senior Umpire.

The operations will continue for ten days. A strong point will be made of endeavouring to approximate the conditions under which the manœuvres will be carried out to those which would exist on service. To this end officers will not be permitted to have elaborately fitted-up mess tents, and a following of caterer's waggons on the march. Each mess will be allowed one hospital marquee and one bell tent, and only one private cart will be permitted to accompany the baggage column. This vehicle can only be a two-wheeled one. The instructions on this point are very stringent, as "His Royal Highness the General Commanding considers that the transport allowed should suffice for all purposes, and he wishes it to be distinctly understood that the hiring of further transport is forbidden."

Manœuvres are now taking place in Ireland, in the country between Dublin and the Curragh, under, as far as possible, service conditions. The following is the general idea for the operations:—"An invading force has landed at Waterford. A portion of it, represented by the 5th Division (as laid down in Table I., Detail of Field Army for Home Defence issued with Army Orders of the 1st February, 1896), has moved through hostile country on Dublin, where a mixed brigade has been formed to oppose its advance. Reinforcements for this brigade are expected from Belfast in a few days." The operations commenced on the 9th August, on the evening of which date the 5th Division reached Dunlavin, and the Northern Force concentrated at Blessington, watching the line of the Liffey. There were no hostilities on the 9th. The manœuvres will be consecutive, each day's operations depending as far as possible on the tactical results of the previous day. There will be no standing camps, and troops will be equipped and provided with sufficient transport to make them mobile.

The Director of Manœuvres and Umpire-in-Chief is Field-Marshal Lord Roberts, commanding the forces in Ireland; and Major-General H. Le G. Geary, C.B., R.A., commanding the Belfast District, is acting as Senior Umpire.

The Headquarters Staff and Umpire Staff are encamped together. The Northern Force is commanded by Major-General Boyce Combe, C.B., commanding Curragh District. Colonel W. T. Dooner, commanding 87th Regimental District, commands the Infantry Brigade of this force. Major-General Viscount Frankfort de Montmorency, Commanding Dublin District, commands the 5th Division.

The Northern Force consists of one squadron 8th Hussars, one squadron 14th Hussars, Q and R Batteries R.H.A., 2nd Bn. East Kent Regiment, 2nd Bn. Royal Fusiliers, 2nd Bn. Duke of Cornwall's Light Infantry (with machine-gun section), 1st Bn. Connaught Rangers, half 7th Field Company, R.E., Army Service Corps, and one Bearer Company.

The Southern Force consists of the 5th Division of the Field Army for Home Defence, viz.:—*9th Brigade.*—1st Bn. Oxfordshire Light Infantry, 2nd Bn. Royal West Kent Regiment, 1st Bn. Durham Light Infantry (with machine-gun section),

4th Bn. Rifle Brigade, 7th Company Army Service Corps, No. 9 Bearer Company.

10th Brigade.—2nd Bn. East Yorkshire Regiment, 1st Bn. Yorkshire Regiment (with machine-gun section), 2nd Bn. Hampshire Regiment, 1st Bn. Derbyshire Regiment, 28th Company Army Service Corps, No. 10 Bearer Company.

Divisional Troops.—One squadron 13th Hussars, 28th, 76th, and 78th Field Batteries Royal Artillery, No. 5 Divisional Ammunition Column, 26th Field Company Royal Engineers, 19th Company Army Service Corps, No. 5 Field Hospital.

Each battalion taking part in the manœuvres numbers 500 warrant and non-commissioned officers and men. Squadrons and batteries are, as far as possible, of the following strength:—A squadron, four troops of 16 files; A Battery, R.H.A., 110 non-commissioned officers and men and 90 horses; A Battery, R.A., 80 non-commissioned officers and men, and 55 horses. The bearer companies, ammunition column, and field hospital are only of skeleton strength, and are formed as follows:—Each bearer company 2 ambulances and 1 water-cart; ammunition column, 1 ammunition and service waggon, and 4 service ammunition carts; field hospital, 1 general service waggon. The Northern Force concentrated at Blessington on 9th August, and the Southern Force at Dunlaven on the same date.

Revised regulations for the employment of Reserve and discharged soldiers have been issued from the War Office. Among the alterations it is notified that a register of pensioners who are desirous of appointment as park-keepers in the Royal Parks in and near London is kept at the War Office, and application for registration should be addressed to the Under-Secretary of State for War, London. In the case of non-commissioned officers still serving, the application may be submitted within six months prior to their intended discharge to pension. The rank of the pensioner must not be below that of sergeant, his age under 45 years, height 5 feet 8 inches, and he must be of good physique, with a character of "very good" or "exemplary." The salary is 24s. or 26s. per week, with a possibility of promotion, and uniform is provided.

AUSTRALIA.—It is high time that a Federal regiment of infantry should be created, recruited amongst, and supported by, all the Colonies. There is one in Canada of great efficiency, and a company has just exchanged stations with the company of an Imperial regiment at Halifax, which has brought about the most loyal and practical service results. The unemployed want something to do, and the permanent loafer and domain agitator could be converted into good men of discipline and obedience. Greater loafers and larrikins have been converted into heroic and exemplary soldiers. The ranks would be open to the more daring and adventurous youths of Australia, who want to taste adventure and see a lot of life. The companies could be raised in several towns or districts, and by changing quarters from colony to colony once a year—after field and battalion operations—the regiment would become very popular, and the flow of promotion of all ranks would attract a good class of officers and men. We agree with General Hutton in saying that a long sojourn in the same place with stagnant promotion destroys service zeal, devotion, and enthusiasm. Such an infantry regiment would encourage the higher training of officers for high command and staff responsibility. Australians, if they really want to qualify themselves for high military positions, would then be able to obtain the best permanent training in "the latest modern requirements of military science." The same benefits would apply to the proposed Federal artillery regiment, the pay of officers and men being simplified by the scale adopted in South Africa.—*Australian A. and N. Defence News.*

It is a pity that an experienced Royal Engineer officer has not yet been appointed to inspect and direct the war improvements in the old and new fortifications, especially since the introduction of wonderfully high and most destructive explosive shell fire. Most of our forts and coastal defence works almost require reconstruction, and those forts and sites under the secret scheme of defence in the event of war also want the most able and experienced revision.—*Australian A. and N. Defence News.*

AUSTRIA-HUNGARY.—When the Imperial Manœuvres take place between the 10th and 15th of September in the neighbourhood of Totis, the Emperor Francis Joseph and the Emperor William will take up their quarters in the Castle which belonged to the late Count Nicolas Esterhazy, now the property of his nephew, Count Francis Esterhazy. The suites of both monarchs and the Chief of the General Staff, Field-Marshal Baron von Beck, will be accommodated in the same place. After the manœuvres the two Emperors will go for shooting to Belye, the property of the Archduke Frederick. They will then proceed to Buda-Pest, where the German Emperor will be entertained for three days. After that he will return to Berlin, and the Emperor Francis Joseph will remain in Buda-Pest.—*Militär-Zeitung.*

According to Army Orders, cyclists are now to be employed, not only on field service, but also in garrisons in the conveyance of orders, etc. They are to wear gaiters of the same colour as their trousers, and to conform, as nearly as possible, to the order of the other troops when in marching order.—*Militär-Wochenblatt.*

FRANCE.—The Reserves taking part in the Army Manœuvres in the north of France will begin to assemble on August 23rd, their concentration being completed on or before September 3rd. Cavalry operations having occupied September 4th, the three following days will be devoted to manœuvres in which the 1st (or Lille) Army Corps will be opposed to the 2nd Army Corps from Amiens. On September 9th the two army corps will act together, the entire force being under the command of General de France. This phase of the operations will continue until the 12th. Upon September 14th it is expected that the troops engaged will be reviewed at St. Quentin by the President of the Republic.

The report drawn up by the French War Office respecting the results of the experiment made with aluminum cooking utensils by the troops engaged in Madagascar, has been issued. The report states that the general results of the experiment were favourable. The chief advantages are unanimously declared to be:—1. Great lightness, a quality much thought of by the experimenters, on account of the relief afforded in the matter of transport. 2. Facility in cleaning the utensils, which are not subject to rust in any appreciable degree. 3. More rapid cooking of provisions, whence economy of time and fuel. The chief inconvenience attached to an aluminum utensil is that it cannot be soldered. When it is damaged it is useless, cannot be repaired in any way, and must be replaced.

The question of the fortification of Nancy has raised that of fortification in general. In France the prevalent opinion is against permanent fortification, and in favour of taking the offensive, because, as is now generally believed in European Armies, it is only by the offensive that any real success can be gained. It must, however, be said that for political reasons it may be necessary to keep up permanent fortifications. For instance, we repudiate all intention of aggression, and the consequence is that our frontiers must be fortified. From a purely military point of view, the fortification of Nancy does not count for much; but it would produce a feeling of security, and would enable our field army to operate in freedom. A glance at the map shows that Nancy forms a very distinct salient in advance of our general line of defence, which is explained by the fact that after the war it was not included in the defensive line of our north-east frontier.

In short, Nancy fortified is merely Nancy protected, but forms no assurance against invasion. Nothing is further from our temperament than to depend on defensive measures. The training and education of the Army should be entirely directed to the development of the initiative, and the idea of its chiefs should be that it would be better to besiege Strasburg or Metz than to defend Nancy. Say that twenty-four hours after a declaration of war 100,000 Frenchmen were opposed to 100,000 Germans, it is not to be supposed that these two advanced guards would quietly confront each other till their respective armies assembled in their rear. The combat between the advanced guards is inevitable, but we should direct it towards the points most advantageous for ourselves, such as strategically important places, and the river wharves at which the enemy's troops embark. For this purpose our advanced guard should be extremely strong, and the eastern garrisons, especially that of Nancy, should be reinforced. Nancy should be strengthened with men, and not with buildings. These are some of the views which have been expressed on the subject, but it must be left to the Superior Council of War to decide upon a plan without giving it publicity.—*Avenir Militaire.*

The War Minister has decided on forming a school at Châlons for improving the shooting of the infantry. It will also fix on a uniform and rational method of instructing the men in musketry exercises, and will afford to the officers who attend information as to the progress in this branch both at home and abroad. The practical exercises are carried out during two periods of ten and thirteen days respectively. The first takes place from the 5th to the 14th August, and the second from the 16th to the 28th. In 1897 these exercises are to be reserved exclusively for colonels, lieut.-colonels, and majors of corps stationed in France. —*Revue du Cercle Militaire.*

By orders of the Minister of War some important field-firing operations were carried out at the camp of Châlons between the 15th and 27th July under the direction of General Nismes. The firing took place at dummy targets representing cavalry, artillery, and infantry in different formations, and was somewhat similar to the practice carried out at our own field-artillery camp at Okehampton, with the difference that infantry also took part, and that each day's real firing was a realistic reproduction of operations which had been previously carried out on the preceding days by two opposing forces of the three arms, the artillery taking up the same positions on the ground they had previously occupied, but instead of using blank, firing with projectiles at dummy targets.

Full reports of the manœuvres were given from day to day in the Paris papers, from which the following brief journal of the operations is extracted:—

15th July.—To give the artillery officers present a practical lesson of the effect of infantry fire, the first day was given up to infantry fire at known and unknown distances at dummies representing artillery in different formations. After inspecting the targets the results of the fire were summarised, so as to give the relative number of hits on the different formations represented.

16th July.—The theme for the day was as follows:—A force from the west is marching on La Cheppe *viâ* Thuisy and Mourmelon to meet an enemy advancing from the direction of Bar-le-Duc.

17th July.—A Northern Force is at Saint-Hilaire marching towards Châlons; a Southern Force arrives from Cuperly, and the two forces come into contact near Châlons camp. The Southern Force being numerically the stronger, retains its position. Real firing was not carried out on these two days, but the manœuvres were very interesting and profitable to all concerned.

19th July.—The day was given up to real artillery fire at dummy targets, representing the following phases of the combat of 16th of the Eastern Force:—

1. Engagement by the artillery of the advance guard and its reinforcement from the main body.
2. Changes of position, fire against the artillery and infantry of the principal position.
3. Change of position of the left group; preparation for the attack of the farm of Perches.

After the real firing ceased, the seven battalions of the 79th Infantry Brigade advanced to the attack in three lines, the artillery firing blank. The assault was delivered with great *élan*, and when the third line, which advanced in columns of companies, arrived at the heights it passed through intervals in the first and second lines, then deployed, and to the music of drums and bugles executed a most realistic charge and pursuit of the enemy.

20th July.—The artillery alone commenced real practice at dummies representing phases of the combat of 17th. Everything had been carefully arranged to reproduce as nearly as possible the final situation on that day, the enemy being represented by successive lines of dummies lying down, which by a system of counterpoises and pulling a rope could be made to start upright at the desired moment for a given period, the targets were also constructed so as to fall down when struck, so that the effect of the fire was instantly visible and most instructive to the artillery.

21st July.—The artillery practice was continued, further episodes of the combat of 17th being reproduced, the targets representing the positions of the Northern Force, and the artillery of the Southern Force firing at them from the same positions that they had previously occupied on the 17th when firing blank.

After the firing ended the infantry of the 79th Brigade advanced to the attack as on the 19th, supported this time by four squadrons of dragoons charging the enemy's left.

The interest shown by officers and men of all arms in these manœuvres was very great, and at the close of each operation General Nismes summed up and criticised in a masterly manner the work of the day.

22nd July was devoted to manœuvres with two opposing forces. The Northern Force consisted of 3 battalions of the 94th Regiment, 6 field batteries, 2 horse batteries, and 2 squadrons of cavalry. The Southern Force was composed of 4 battalions, 12 field batteries, and 2 squadrons of cavalry. Both forces represented the advance guards of armies marching to the south-east and north-east respectively, the Northern Force being assembled at the farm of Saint-Hilaire, and the Southern at the farm of Piémont.

The Northern Force, which represented the enemy, gained the plateau of La Hache at 7.30 a.m., and the commander of the Southern Force received orders to advance immediately to its attack. Both forces deployed under protection of their artillery, and the Southern Force eventually charged up the glacis of La Hache, and captured the position when "Cease-fire" was sounded. As on previous days, the valuable criticisms of General Nismes were very much appreciated by the commanding officers, but much improvement had already taken place, mistakes were fewer, and it was easy to see that all officers were taking the greatest care to avoid errors.

23rd July.—General Billot (Minister of War) arrived at the camp, and the real artillery practice of the 19th was gone through again in his presence. The superior officers were afterwards presented to the Minister of War, and a short criticism was delivered by General Nismes.

24th July.—The Minister of War having ordered that no interruption of the operations arranged by General Nismes was to take place, the manœuvres on this day were a reproduction of the most important situations of the combat of the 22nd, with real artillery fire at dummy targets, the troops returning to camp

at 1 p.m. At 3 p.m. the infantry were ordered out for field firing at dummies at known and unknown distances, for the benefit of the artillery officers. The targets represented the following :—

1. A line of skirmishers lying down.
2. A line of skirmishers standing.
3. A battery in position.
4. A half-company of infantry in line.
5. A half-squadron of cavalry.

A battalion of the 94th was the infantry employed, each of its four companies being told off to fire for certain limits of time.

The results were such that the Minister of War, addressing the artillery officers, said :—"This is a proof again, gentlemen, that when within 1,200 to 1,100 metres you will have to limber up, if you do not wish to be destroyed."

Later in the day there was a repetition of the real artillery fire of the 22nd, and of the assault by the 79th Brigade on the plateau of La Hache in the presence of the Minister of War.

26th July.—The day began with real artillery fire from certain positions occupied during the course of the manœuvres on the 22nd, but this time it was the positions of the Northern Force that were in question. As was stated in the account of the manœuvres of the 22nd, the Northern Force had to give way before the superiority of the Southern Force, so the General gave orders that after the artillery firing was concluded, the 79th Brigade was to form a rear guard and protect the retreat.

At 8 a.m. the two groups of batteries took up position on the plateau of La Hache, and opened fire on the twelve batteries of the Southern Force represented by dummies placed on each side of a wood. The fire was next turned on another series of dummies, representing the southern batteries in their second position; and lastly with case on infantry dummies, representing the lines of the assaulting columns. The real firing then ceased, and the infantry brigade forming up as a rear-guard protected the retreat retiring by alternate battalions in a masterly manner, disposed by General Hardschmidt.

In the evening the Minister of War gave an official dinner to the superior officers in camp at the mess of the "École normale de tir."

27th July.—General Billot (Minister of War) left in the morning for Paris, and the operations at Châlons concluded with a massed artillery fire of twenty batteries (120 guns) at an equal number of dummy targets, representing limbers, guns, and their servers, the target battery on the right being formed of old gun carriages, mounting sham wooden guns; these targets were placed along the crest of an eminence known from its map shape as the "haricot." The spectacle of the 120 guns all firing at once, together with the bursting of the shells, was magnificent, and a sight never to be forgotten. An assault by the infantry on the position of the "haricot" then concluded the operations. The mounted officers then assembled to hear General Nismes give his usual discourse, but contrary to expectations the General contented himself by praising in a sprightly and humorous manner the "zeal, energy, and good humour" that had been shown by all ranks during the progress of the manœuvres.—*Le Temps.*

GERMANY.—On the occasion of the centenary of the Emperor William the Great, a prize was offere for the best musical composition suited to Captain Moser's song, "The German Soldier." The composition given in under the motto "German Song from German Hearts" was awarded the prize, and proved to be the work of Music-director L. Grosse, of Dresden. The song will shortly appear in print, so as to be within the reach of the whole German Army.—*Militär-Wochenblatt.*

Some remarkable flying by carrier-pigeons took place recently from Dover; 2,000 of these birds were in crates on the Admiralty pier since the 18th July, in charge of an agent of the German War Office, with the object of testing their flight. All the birds were flown shortly after five o'clock on the morning of the 20th, and at 11.15, about six hours afterwards, the agent received a telegram at Dover announcing that many of the birds had arrived at Dusseldorf, Germany, to which place they belong. It is stated that 100 of the birds are the property of the German Emperor.

It has been asserted by various journals that the revolver recently invented will be the arm of the whole German cavalry. Certainly the pistol is the right weapon for mounted men. In the wars of the first Empire the sword was chiefly relied on, but in the American civil war the pistol, in the form of a revolver, became paramount. The cavalry charges of 1866, however, rehabilitated the sword which the Americans looked down upon. The best authorities are now united in the opinion that a good fire-arm is necessary for the cavalry, and it is undoubted that the American cavalry, with their revolvers, obtained greater results than would have been possible had they depended on their swords.

Officers having the prefix *von* to their names abound in the German Army. There are thirty regiments in which all the officers are "noble." Only fourteen officers in the Cavalry of the Guard are without the first, or some higher, grade of nobility. As regiments have the right to receive or refuse candidates for admission to their body, it is open to them to perpetuate the present state of things in spite of the Press and the Reichstag.—*Avenir Militaire.*

There is still a discussion on weapons for the cavalry. The mode in which the carbine is carried on the saddle is condemned, as it causes sores on the horse. The short sword experimentally tried in the cavalry is considered to be nothing short of disarmament, most officers believing that the long sword is the proper weapon for a cavalryman. As to the lance, they think that it is a mistake to adopt it generally, as it is an encumbrance in the field. If it cannot be totally suppressed, the cuirassiers, dragoons, and hussars should be relieved of it, and let the uhlans, as in 1870, be the only troops to carry it. The cavalry may then carry the long sword and the carbine, which are their proper arms.—*Revue du Cercle Militaire.*

ITALY.—The new Italian rifle invented by Captain Cei, and offered to the Minister of War after trial in the Navy, is similar in appearance to the model of 1891. It has the same barrel, fires the same ammunition, and is fitted with the bayonet of 4·5 kilogrammes. The barrel is surrounded by a band; the butt is the only part that is of wood, the remainder being of aluminum. It has only one sight, that being for long distances. The method of closing the breech, and the extractor, are the same as in the pattern of 1891. The rifle can be fired independently of the magazine, which holds fifty cartridges. By successive pressures of the trigger it can be loaded like a revolver, without removing it from the shoulder, and if the pressure be continued all the cartridges will be fired. There is no recoil. Three hundred cartridges may be fired in succession without any dangerous heating of the barrel.—*Avenir Militaire.*

The grand manœuvres of 1897, which will take place between the 10th and 21st September, are to be carried out by the 3rd and 5th Army Corps, under the command of Lieutenant-General Morra di Lavriano. General Bava who is at present the commander of the 3rd (Milan) Corps, will, owing to his having commanded a corps in the manœuvres of 1895, give up his command temporarily to General Mirri. The 5th (Verona) Corps will be under its own commander,

General Tournon. The attached cavalry division is to be under the orders of General Gozzani di S. Giorgio, the Inspector-General of the Army.—*Revue du Cercle Militaire.*

RUSSIA.—The pay of Russian officers is said to have remained almost stationary for forty years. This is especially hard on subalterns, for although the pay is the same, the price of necessaries has increased in many cases at least threefold. When the account of a sub-lieutenant is examined, it is seen that after paying his share of expenses, entertainments, etc., he receives about 20 or 25 roubles a month. Of that sum he has to pay 15 for his board, so that his balance is small. The position of re-engaged under-officers is brilliant as compared with that of the sub-lieutenants. They receive free quarters and 18 roubles a month perfectly clear, besides various other advantages. After serving for twenty-three years they are entitled to a payment of 1,000 roubles, or a pension of 96 roubles a year for life. The sub-lieutenants, on the other hand, are in a worse plight than those of any other Army in Europe.—*Revue du Cercle Militaire.*

SWITZERLAND.—The strength of the Swiss Army on the 1st January, 1897, was as follows:—

Staff	49
Headquarter troops	508
1st Army Corps	35,433
2nd Army Corps	34,662
3rd Army Corps	34,425
4th Army Corps	30,975
Gothard Garrison troops	3,604
St. Maurice Garrison troops	1,574
Disposable troops	3,592
Total	144,822

This result is 3,468 greater than that of last year.—*Militär-Wochenblatt.*

NAVAL AND MILITARY CALENDAR.

JULY, 1897.

1st (Th). The Jaalin Tribe in the Soudan, under Abdulla Wad Said, defeated with heavy losses by a superior force of the Khalifa's troops under Mahmud.

,, ,, Serious riots at Chitpur, Calcutta, suppressed by military force.

3rd (Sat). Indian and Colonial troops presented with Jubilee medals by H.R.H. the Prince of Wales.

4th (S). H.M.S. "Ringdove" arrived at Plymouth from Australian station.

6th (Tu). Major-General Sir H. Kitchener, Sirdar, left Cairo for the front to complete the preparations for a further advance south.

7th (W). Major Ridley, 7th Hussars, attacked McGuitse's band 12 miles from Fort Charter.

8th (Th). Chief Galishwe escaped from Langeberg with 100 followers.

12th (M). Commencement of National Rifle Association's Meeting at Bisley.

13th (Tu). Fortifications of Johannesburg, Transvaal, reported to be completed.

17th (Sat). H.M.S. "Bonaventure," late flag-ship in the East Indies, paid off at Devonport.

19th (M). H.M.S. "Ringdove" paid off at Devonport.

20th (Tu). Volunteers Bill passed House of Lords.

,, ,, Tochi Punitive Expedition, under Major-General C. Bird, occupied Sheranni, without opposition.

21st (W). Victory of Portuguese troops over the rebels near Chimbutu Gazaland, East Africa.

24th (Sat). Queen's Prize, National Rifle Association, won by Private Ward.

,, ,. Conclusion of National Rifle Association Meeting, Bisley.

25th (S). Main kraal of the Mashonaland Chief Mashingombi captured by force under Captain De Moleyns; Mashingombi killed.

,, ,, Mandie's and Mandala's kraals captured by party of 7th Hussars.

,, ,, Launch of first-class armoured cruiser "Varese" at Leghorn for Italian Navy.

26th (M). Attack on British, Malakand, Chitral, by tribes of the Swat Valley; one British officer killed, one died of wounds, four wounded.

27th (Th). Fighting in the vicinity of Malakand, Chitral.

,, ,, H.M.S. "Royal Arthur" paid off at Portsmouth.

28th (W). Further fighting near Malakand.

29th (Th). Night attack at Malakand; two British officers and seventeen Sepoys wounded, one Sepoy killed.

,, ,, Colours of 1st Bn. North Staffordshire Regiment (64th), presented in 1862, deposited in Lichfield Cathedral.

30th (Fri). Successful operations of Langeberg, Bechuanaland; Gamasep and Gamaluce captured by Bechuanaland Field Force.

31st (S). Military Manœuvres Bill passed House of Lords.

,, ,, Belgian Antarctic Expedition, under command of Captain A. de Gerlache, sailed from Antwerp.

FOREIGN PERIODICALS.

NAVAL.

ARGENTINE REPUBLIC.—*Boletín del Centro Naval.* Buenos Aires: April and May, 1897.—"The Annual Report of the Directors of the Centro Naval." "The Naval School." "Nautical Geography of the Argentine Republic." "Nautical Geography of the Argentine Republic.—A Reply." "The Engineering Officers of the Fleet; A School Necessary." "The Scientific Knowledge of Naval Officers."

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.* No. 8. Pola and Vienna: August, 1897.—"The Naval Action off Lissa in 1811." "The Influence of Wind and Air-Pressure on the Tides." "The Seychelles." "An Alternating-Current Range and Position-Finder." "Experiments with the Temple-Guyot Water-tube Boiler." "On an Exact Reduction-Formula for Circum-Meridian Altitudes." "The Application of the Compound Steam-Turbine as a Motor for Ships." "Naval and other Notes."

FRANCE.—*Revue Maritime.* Paris: June, 1897.—"The Feeding of Boilers" (*concluded*). "Statistics of Shipwrecks for the Year 1894." "Aerial Currents: their Course and their Use for Balloonists" (*continued*). "Foreign Naval Notes." "The Maritime Fisheries."

Le Yacht. Paris: 3rd July, 1897.—"After the Naval Review at Spithead." "Yachting Notes." "The Naval Manœuvres of 1897." "A new Model of an English Vedette-boat." "The Naval Review at Spithead." "The Parliamentary Commission on the Mercantile Marine." 10th July.—"The Fishing Matériel in France." "The United States Navy: The 'Wisconsin,' 'Illinois,' and 'Alabama.'" "The Trials of the 'Masséna.'" 17th July.—"The Congress of Naval Architects in London." "Yachting Notes." "The Naval Manœuvres of 1897" (*continued*). 24th July.—"The English Naval Manœuvres." "Yachting Notes." "The Naval Manœuvres of 1897" (*continued*). 31st July.—"The Naval Power of England; her Strategical Positions Abroad." "Yachting Notes." "The Naval Manœuvres of 1897" (*continued*). "The English Naval Manœuvres" (*concluded*).

Le Moniteur de la Flotte. Paris: 10th July, 1897.—"A Navy League." "The Budget for the Navy for 1898." "The Naval Manœuvres." "The Navy in Parliament." 17th July.—"The Naval Manœuvres." "The Naval Estimates for 1898." "The Navy in Parliament." "The English Naval Manœuvres.' 24th July.—"Towards the Poles." "The Navy in Parliament." "The Naval Manœuvres." "Naval Postal Service in the Eighteenth Century." "Mobilisation of the Inscrits Maritimes." 31st July.—"The Naval Manœuvres." "Inflammable Wood."

La Marine Française. Paris: 15th July, 1897.—"The Port of Raschgoun and the Mouth of the Tafua." "Report on the Coal and Store Supplies of the Fleet and the Creation of Bases of Operations." "Reflections on the Jubilee of Queen Victoria." "A New Machine for Working Under Water." "The Value of English Squadrons and the Destroyers." "The Millions for the Navy." "Some Ideas on Naval Reform."

GERMANY.—*Marine Rundschau.* Berlin: August, 1897.—"The Earlier History of the Fleet" (*continued*). "Some Remarks on the Work Performed by the 'Freya,' 'Luisa,' and 'Nautilus,' lately struck off the Effective List of the Fleet." "Reports from various Ships." "Experiments with Belleville Boilers." "Remarks on Nautical Astronomy." "Pictures from the History of the Hausa." "Foreign Naval Notes."

ITALY.—*Rivista Marittima.* Rome: June, 1897.—Has not been received.

L'Osservatore Navale. Palermo.—Has not been received.

SPAIN.—*Revista General de Marina.* Madrid: July, 1897.—"Organisation of the Engine-room Departments in Various Navies." "Geometry of Ships." "The Trials of the 'Turbinia.'" "Breakdown on board the English Torpedo-boat Destroyer 'Star.'" "The New Belleville Boilers." "Engines of the English Destroyers 'Swordfish' and 'Spitfire.'" "England and the Future of the Torpedo." "The Naval Spectacle at Spithead."

MILITARY.

AUSTRIA-HUNGARY. — *Militär-Zeitung.* Vienna: 5th July, 1897. — "The Imperial Landwehr." "The Employment of the African Kola Nut for Military Purposes." 13th July.—"Reform in the Training of the Landwehr." "A French Critic on the German Manœuvres of 1896." 21st July.—"The Army and National Education." "The Greek Corps of Officers and the last Turco-Greek War."

Mittheilungen über Gegenstände des Artillerie- und Genie-Wesens. Vienna: July, 1897.—"An Enquiry Regarding the Cone of Dispersion in Firing Shrapnel." "Ventilation of Barracks." "The Firing of Field Artillery from under Cover."

Organ der Militär-wissenschaftlichen Vereine. Vienna: July, 1897.—"Protected Emplacements." "The Services of Obtaining Intelligence and Conveying Reports among High Mountains." "The Chemical Condition of the Air in the Studies and Dormitories of the Army School in Weisskirchen."

FRANCE.—*Revue du Cercle Militaire.* Paris: 3rd July, 1897.—"Urgent Reforms in the Infantry." "The Re-organisation of the Italian Army." "The Conquest of Mossi." "Madagascar." 10th July.—"The German Army in 1897." "Urgent Reforms in the Infantry" (*continued*). "The Review of the 14th July." 17th July.—"The Late and the New Russian Infantry Regulations." "The Scientific Services and the Schools of the Spanish Navy." "Urgent Reforms in the Infantry" (*continued*). "A New Transcaspian Line." 24th July.—"A Study on the Expedition to Madagascar in 1895." "Urgent Reforms in the Infantry" (*continued*). 31st July.—"Lectures to the Men." "Study on the Expedition to Madagascar" (*continued*). "Urgent Reforms in the Infantry" (*continued*). "Racing at Nancy."

Journal des Sciences Militaires. Paris: July, 1897.—"The Danger of Militias" (*concluded*). "Instructions to the 2nd Cavalry Division" (*continued*). "Studies on the Campaign of 1796-97 in Italy.—Third Part" (*continued*). "High Command." "The Fortification of Nancy." "The Marching of Infantry." "The Conditions of War in the Future."

Revue de Cavalerie. Paris: July, 1897.—"The Development of Ideas on the Employment of Cavalry since the time of Napoleon." "The *rôle* of the Cavalry in a Covering Force" (*concluded*). "From Bautzen to Pläswitz" (*continued*). "Cavalry Fighting on Foot" (*continued*). "One more Word on Squadron Clothing Stores."

Revue d'Artillerie. Paris: July, 1897.—"English Coast Artillery." "Artillery Material at the Factory of Finspong." "The Museum of Artillery." "A Study of Shell Fire." "Spanish Field and Mountain Artillery Material" (*continued*).

Le Spectateur Militaire. Paris: July, 1897.—"Another Word on High Command." "The Marriage of Conscripts." "Bitche in 1793."

Revue Militaire de l'Étranger. Paris: July, 1897.—"The New Regulations for Field Service in the Austro-Hungarian Army" (*continued*). "The Present Organisation of the Engineers in the Russian Army" (*concluded*). "The Reorganisation of the Italian Army." "The Military Organisation of Montenegro."

Revue du Génie Militaire. Paris: July, 1897.—"Notes on Fortification dictated by Napoleon at St. Helena." "Notes on the Use of Land and Stands at Great Reviews." "Fort Pampus of Amsterdam." "Lightning Conductors in the Neighbourhood of Powder Magazines."

GERMANY.—*Militär-Wochenblatt.* Berlin: 3rd July, 1897.—"Infantry Tactics and the Combined Services." "Alteration of the Battery Strength or of the Fire Order." "The new Italian Army Regulations." 7th July.—"The Arrangement of Temporary Quarantine Stations for the Japanese Army on returning from the Chino-Japanese War." "The Training of Horses for War." 10th July.—"The Operations against Vinoy in September, 1870." "The Training of Horses for War" (*concluded*). "Report of the Swiss Military Department for 1896." 14th July.—"Horse Artillery with Cavalry Divisions." "The Fortification of Nancy." "Grants of Colours and Standards to Independent Troops in Russia." 17th July.—"Horse Artillery with Cavalry Divisions" (*concluded*). "New Drill Regulations for the Russian Infantry." 21st July.—"Pictures from the Turkish Army." "French Cavalry Manœuvres in 1896." 24th July.—"Pictures from the Turkish Army" (*continued*). "French Cavalry Manœuvres in 1896" (*continued*). 28th July.—"The Seventieth Year of the Service of His Excellency Field-Marshal Count von Blumenthal, 30th July, 1897." "The Value of a Garrison in France." 31st July.—"Increasing the Fleet." "Pictures from the Turkish Army" (*continued*). "The Disposal of the Artillery in Two Fire-lines."

Internationale Revue über die gesammten Armeen und Flotten. Dresden: July, 1897.—"Field Glasses for the Army." "The Strategic Importance of the Carpathians." "The British Army and Navy." "Russia's New Harbour on the White Sea." "Napoleon's Preparations for 1805." "Recruiting by Lot in Belgium." "The Roumanian Army." "The Turco-Greek War."

Jahrbücher für die deutsche Armee und Marine. Berlin: July, 1897.—Has not been received.

Neue Militärische Blätter. Berlin: July, 1897.—Has not been received.

Deutsche Heeres-Zeitung. Berlin: 3rd July, 1897.—"A Scheme for the Manœuvres of the Russian Infantry." "The Campaign of 1864" (*continued*). 7th July.—"The Fighting Method of the French Infantry." "The Campaign of 1864" (*continued*). 10th July.—"Japan's Fleet-building Programme from 1897 to 1906." "The Campaign of 1864" (*continued*). 14th July.—"The Initiative at the German Grand Manœuvres." "The Campaign of 1864" (*continued*). 17th July.—"The Duration of Military Service in France." "The Campaign of 1864" (*continued*). 21st July.—"Rear-Guards and Flanking Troops." "The Campaign of 1864" (*continued*). 24th July.—"School and Cross-country Riding." "The Campaign of 1864" (*continued*). 28th July.—"An Attacking or a Defending Fleet?" "The Campaign of 1864" (*concluded*). 31st July.—"Modern Artillery Questions from a Tactical Standpoint," "The Horse Grenadier Regiment Baron von Derfflinger."

ITALY.—*Rivista Militare Italiana.* Rome: 1st July, 1897.—"Napoleon and Wellington." "Training of Small Bodies of Infantry for Night Fighting." "The Provisional Instructions of 24th December, 1896, for the Use of the French Cavalry in the Field." "An Analytical-Comparative Study of the Military Power of China and Japan and the War of 1894-95." 16th July.—"The Record of a Veteran." "Napoleon and Wellington" (*concluded*). "Some Hints for dealing with Pleuropneumonia in Horses." "An Analytical-Comparative Study of the Military Power of China and Japan and the War of 1894-95" (*continued*). "The Italian Cavalry according to a French Critic."

Rivista di Artiglieria e Genio. Rome: June, 1897.—"On the Preparatory Aiming of Coast Artillery (theoretical)." "The Directive Organs for the Royal Engineer Service in War." "Mauser Automatic Portable Arms of General Wille." "Study of Mountain Matériel for Swiss Artillery." "The Rations of Campaigning Artillery Horses." Miscellaneous:—"On the Efficiency of Battery Fire." "Transformation of Lightning Conductors from Fixed to Revolving." "American Opinions on Different Questions of Artillery and Armour." "Conditions for the Installation of Dynamite Magazines." "Preparation of Campaigning Artillery for War in the Future." "Small Calibre Rifles for Hunting Large Animals." "Notices of Books, etc."

RUSSIA.—*Voïénnii Sbórnik.* St. Petersburg: July, 1897.—"The Thought, the Action, and the Word." "Remarks on Shooting and on Encouragement to Shoot." "On the Field Service Regulations." "Notes on Artillery." "Staff and Cadres in the time of Napoleon I." "On the Means of Coping with Military Epidemics in Peace and War."

SPAIN.—*Memorial de Ingenieros del Ejército.* Madrid: July, 1897.—"Some Remarks on the Suggested New Artillery Barracks at Burgos" (*continued*). "A Modern System of Electric Tramways" (*concluded*). "Effect that Mechanical Action Exercises on the Properties of Steel."

Revista Técnica de Infanteria y Caballeria. Madrid: 1st July, 1897.—"The Wars in the Low Countries: the Duke of Alva" (*continued*). "Surprises and Ambuscades in the Wars of America." "A Point of International Military Law" (*concluded*). "Last Campaign of the Spanish Army in Peru, 1824" (*continued*). "The New Disciplinary Regulations of the Portuguese Army" (*concluded*). 15th July.—"The Central Infantry School of Musketry at Parma." "General Nomenclature for the Infantry." "Religious Sentiment in the Colonial Wars." "History of the Captains-General of Cuba."

SWITZERLAND.—*Revue Militaire Suisse.* Lausanne: July, 1897.—"The Duke d'Aumale" (*concluded*). "Personal Equipment of Infantry." "Quick-Firing Field Guns."

NOTICES OF BOOKS.

The Ruined Cities of Ceylon. By H. W. CAVE, 4to. London: Sampson Low, Marston and Co., 1897.

The First Crossing of Spitzbergen. By Sir W. M. CONWAY. Large 8vo. London: Dent and Co., 1897.

The Journal of Sir George Rooke, Admiral of the Fleet, 1700-1702. Published by the Navy Records Society. London, 1897.

The Royal Navy: A History. By W. LAIRD CLOWES. Vol. I. 8vo. London: Sampson Low, Marston and Co., 1897.

Erzherzog Carl von Österreich als Feldherr und Heeresorganisator. By M. E. von ANGELI. Vols. III. and IV. 8vo. Vienna and Leipsic: W. Braunmüller, 1897.

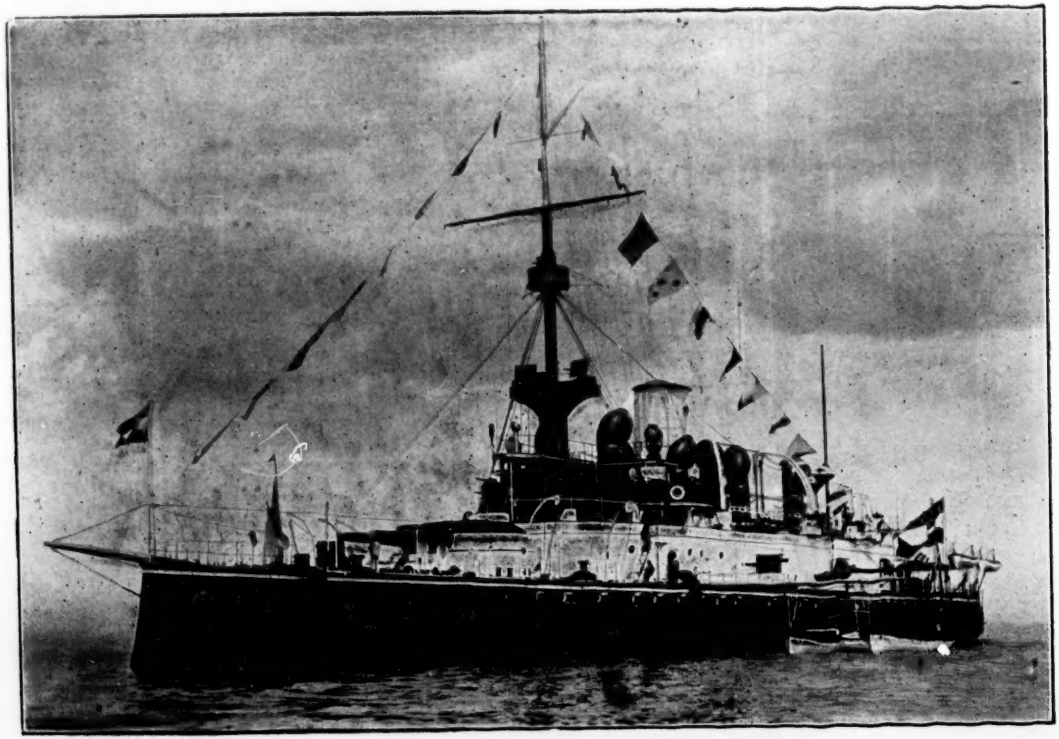
Le Corps d'Armée aux Ordres du Maréchal Mortier; Combat de Dürrenstein. By Le Capitaine ALOMBERT. 8vo. Paris: Berger-Levrault et Cie., 1897.

Mémoires d'un Officier aux Gardes Françaises (Le Général Marquis de Maleissye) 1789-1793. 8vo. Paris: E. Plon, Nourrit et Cie., 1897.

Le 13e Corps dans les Ardennes et dans l'Aisne, 1870-71. By Le Capitaine VAIMBOIS. 8vo. Paris: H. Charles-Lavanzelle, 1897.

Military Operations of General Beauregard, 1861-65. By ALFRED ROMAN, A.D.C. and Inspector-General on the Staff of General Beauregard. 2 Vols. 8vo. New York: Harper Brothers.

Les Français à Madagascar. By Le Commandant GRANDAN. 2 Vols. 12mo. Paris, 1895.



J. J. Kelliher & Co., London.

Austrian Battle-ship "WIEN," 5,550 Tons, 8,500 I.H.P.

See Naval Notes, page 1175.